MHI

TECHNICAL MANUAL
Collection data

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PACKAGED AIR-CONDITIONER

(Split system, Air to air heat pump type)

CEILING RECESSED COMPACT TYPE

FDTCVA151HEN1R	FDTCVA302HENP1R	FDTCVA602HENT2R
201HEN1R	402HENP2R	602HEST2R
	402HESP2R	

CEILING RECESSED TYPE

FDTVA151HEN1R	FDTVA302HENP1R	FDTVA602HENT2R
201HEN1R	402HENP2R	602HEST2R
251HEN1R	402HESP2R	802HEST2R
302HEN1R	502HENP2R	
402HEN2R	502HESP2R	FDTVA802HESD2R
402HES2R	602HENP2R	1002HESD2R
502HEN2R	602HESP2R	
502HES2R	802HESP2R	
602HEN2R	1002HESP2R	
602HES2R		

WALL MOUNTED TYPE

FDKNVA151HEN1R	FDKNVA302HENP1R	FDKNVA602HENT2R
201HEN1R	402HENP2R	602HEST2R
251HEN1R	402HESP2R	
	502HENP2R	
	502HESP2R	

CEILING SUSPENDED TYPE

FDENVA151HEN1R	FDENVA302HENP1R	FDENVA602HENT2R
201HEN1R	402HENP2R	602HEST2R
251HEN1R	402HESP2R	802HEST2R
302HEN1R	502HENP2R	
402HEN2R	502HESP2R	
402HES2R	602HENP2R	
502HEN2R	602HESP2R	
502HES2R	802HESP2R	
602HEN2R	1002HESP2R	
602HES2R		

SATELLITE DUCTED TYPE

FDUMVA201HEN2R	FDUMVA402HENP2R	FDUMVA602HENT2R
251HEN2R	402HESP2R	602HEST2R
302HEN2R	502HENP2R	802HEST2R
402HEN2R	502HESP2R	
402HES2R	602HENP2R	
502HEN2R	602HESP2R	
502HES2R	802HESP2R	
602HEN2R	1002HESP2R	
602HES2R		

HIGH STATIC PRESSURE DUCT TYPE

FDUVA802HES2R
1002HES2R

MULTI-TYPE (V-MULTI) PACKAGED AIR-CONDITIONER

(OUTDOOR UNIT)

FDCVA302HENR
402HENAR
402HESAR
502HENAR
502HESAR
602HENAR
602HESAR
802HESAR
1002HESAR

(INDOOR UNIT)

FDTCA151R	FDTA151R	FDENA151R	FDKNA151R	FDUMA202R
201R	201R	201R	201R	252R
	251R	251R	251R	302R
	301R	301R		402R
	401R	401R		502R
	501R	501R		

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1.1 GENERAL INFORMATION

1.1.1 Specific features

(1) All models employ R410A, with RoHS compliance.

(2) Industry leading COP.

Thanks to achievement of the highest COP level in the industry, the energy consumption has been cut by 24~38% compared with our former models (constant speed models).

(3) Energy labeling “Class A”

MHI models have cleared the class A standard, the highest energy saving level, with their high COP (coefficient of performance).

(4) The microcomputer chip is installed in the indoor unit and outdoor unit. There is no need for the unit to communicate between the outdoor and indoor units so the unit is more resistant to electromagnetic noise thus the incidence of microcomputer malfunction has been reduced. The compressor in the outdoor unit has its own self protection function, that reacts according to abnormal high pressure and excessive high temperature.

(5) There are only three power lines between the outdoor and indoor unit. One cabtyre cable with 3 wires encased in one sheath is enough for conducting the wiring work between the outdoor unit and the indoor unit. This contributes to simpler wiring work in the field.

(6) All air supply ports have auto swing louvers. (Only case of FDTC, FDT, FDEN and FDKN models). The indoor fan motor has three speeds of high, medium and low.

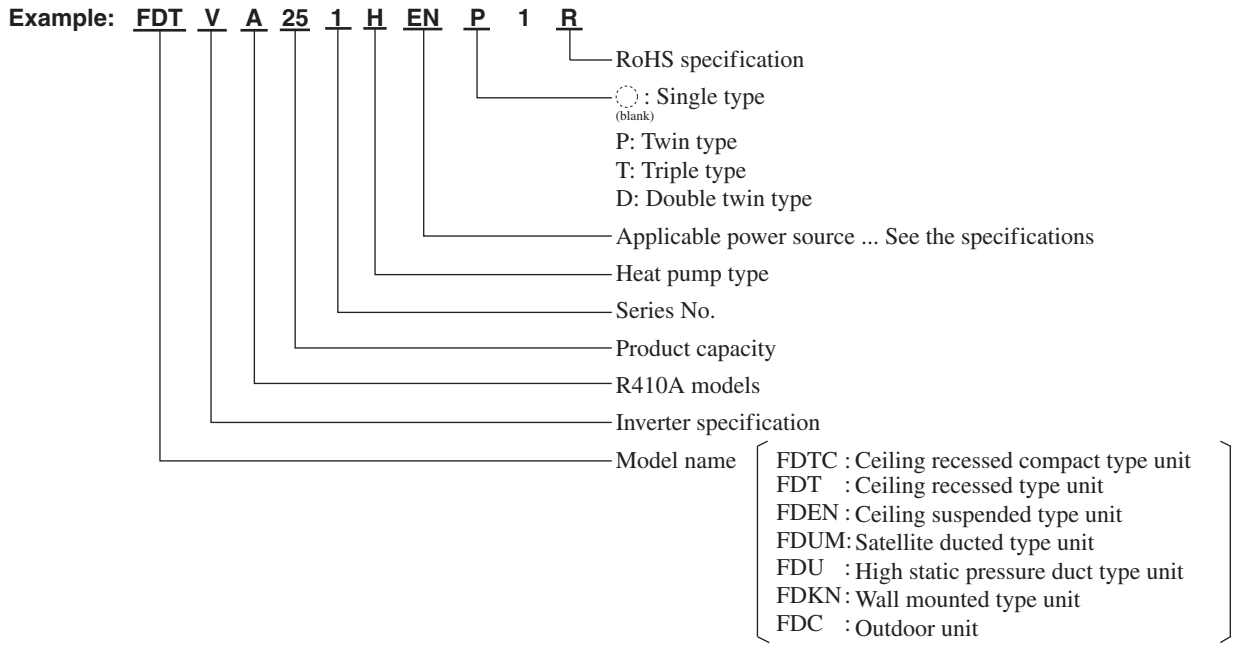
(7) All models have service valves protruding from the outdoor unit for faster flare connection (FDCVA802, 1002: Only a gas side is brazing) work in the field.

(8) The size and weight of the outdoor units in the FDCVA 151~251,302 Series have been greatly reduced. Use of an inverter has also improved energy conservation and economy.

(9) Compared to the previous models, a single fan is used in the FDCVA402~602 outdoor unit models and forward blowing is used in the FDCVA802 and FDCVA1002 models,resulting in markedly reduced weight and greater compactness.In addition, use of an inverter makes these units much more economical compared to the previous fixed speed units.

(10) Realization of significant reduction in size and weight compared with our former models, applying front blow outlet on all models. Reductions are 50% in weight of 6HP, 72% in volume of 8HP and 63% in the foot print of 8HP.

1.1.2 How to read the model name


Example: FDT V A 25 1 H EN P 1 R
RoHS specification
: Single type
(blank)
P: Twin type
T: Triple type
D: Double twin type
Applicable power source ... See the specifications
Heat pump type
Series No.
Product capacity
R410A models
Inverter specification
Model name
FDTC : Ceiling recessed compact type unit
FDT : Ceiling recessed type unit
FDEN : Ceiling suspended type unit
FDUM: Satellite ducted type unit
FDU : High static pressure duct type unit
FDKN: Wall mounted type unit
FDC : Outdoor unit

1.2 SELECTION DATA

1.2.1 Specifications

(1) Ceiling recessed compact type (FDTC)

(a) Single type

Model FDTCVA151HEN1R

Item			Model	FDTCVA151HEN1R	
				FDTCA151R	FDCVA151HENR
Nominal cooling capacity(1)		kW		**4.0 [1.8~4.7]**	
Nominal heating capacity(1)		kW		**4.5 [2.0~5.4]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**1.22/1.22**	
	Running current (Cooling)	A		**5.4/5.6**	
	Power factor (Cooling)	%		**98/99**	
	Heating power consumption	kW		**1.32/1.32**	
	Running current (Heating)	A		**5.9/6.2**	
	Power factor (Heating)	%		**97/97**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:46 Me:42 Lo:38 Mild mode Hi:42 Me:38 Lo:35	48
Exterior dimensions **Height × Width × Depth**		**mm**		**Unit 248 × 570 × 570** **Panel 35 × 700 × 700**	**595 × 780 (+67) × 290**
Net weight		**kg**		**19.5 (Unit:16 Panel:3.5)**	**40**
Refrigerant equipment **Compressor type & Q'ty**				–	**5CS102XFD × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.48 (RB68A)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor		W		**50 × 1**	**34 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:13.5 Me:11.5 Lo:10** **Mild mode Hi:11.5 Me:10 Lo:8**	**41**
Outside air intake				Impossibility	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data **Refrigerant piping size**		**mm (in)**		**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (TC-PSA-24W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDTCVA201HEN1R

Item		Model	FDTCVA201HEN1R	
			FDTCA201R	FDCVA201HENR
Nominal cooling capacity(1)		kW	**5.0 [2.2~5.6]**	
Nominal heating capacity(1)		kW	**5.4 [2.5~6.3]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.62/1.62**	
	Running current (Cooling)	A	**7.1/7.5**	
	Power factor (Cooling)	%	**99/98**	
	Heating power consumption	kW	**1.53/1.53**	
	Running current (Heating)	A	**6.7/7.0**	
	Power factor (Heating)	%	**99/99**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:46 Me:42 Lo:38 Mild mode Hi:42 Me:38 Lo:35	48
Exterior dimensions Height × Width × Depth		**mm**	**Unit 248 × 570 × 570 Panel 35 × 700 × 700**	**595 × 780 (+67) × 290**
Net weight		**kg**	**19.5 (Unit:16 Panel:3.5)**	**40**
Refrigerant equipment Compressor type & Q'ty			–	**5CS102XFD × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**50 × 1**	**34 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:13.5 Me:11.5 Lo:10 Mild mode Hi:11.5 Me:10 Lo:8**	**41**
Outside air intake			Impossibility	–
Air filter, Q'ty			Plastic net (washable) × 1	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel (TC-PSA-24W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(b) Twin type

Model FDTCVA302HENP1R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item		Model	FDTCVA302HENP1R	
			FDTCA151R	FDCVA302HENR
Nominal cooling capacity(1)		kW	**7.1[3.9~8.0]**	
Nominal heating capacity(1)		kW	**8.0[4.0~9.0]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.91/1.91**	
	Running current (Cooling)	A	**8.3/8.8**	
	Power factor (Cooling)	%	**99/99**	
	Heating power consumption	kW	**2.08/2.08**	
	Running current (Heating)	A	**9.0/9.6**	
	Power factor (Heating)	%	**99/98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:46 Me:42 Lo:38 Mild mode Hi:42 Me:38 Lo:35	48
Exterior dimensions Height × Width × Depth		**mm**	**Unit 248 × 570 × 570 Panel 35 × 700 × 700**	**750 × 880 (+88) × 340**
Net weight		**kg**	**19.5 (Unit:16 Panel:3.5)**	**60**
Refrigerant equipment Compressor type & Q'ty			–	**2YC45DXD × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**2.95 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.65 (FVC50K)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**50 × 1**	**120 × 1**
Starting method			Direct line start	
Air flow		**CMM**	**Powerful mode Hi:13.5 Me:11.5 Lo:10 Mild mode Hi:11.5 Me:10 Lo:8**	**Cooling:60 Heating:48.5**
Outside air intake			Available	–
Air filter, Q'ty			Plastic net (washable) × 1	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**	**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line		**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel (TC-PSA-24W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDTCVA402HENP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDTCVA402HENP2R	
				FDTCA201R	FDCVA402HENAR
Nominal cooling capacity(1)			kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)			kW	**11.2 [5.6~12.5]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**2.84/2.84**	
	Running current (Cooling)		A	**12.4/13.0**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**3.08/3.08**	
	Running current (Heating)		A	**13.5/14.1**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:46 Me:42 Lo:38 Mild mode Hi:42 Me:38 Lo:35	50
Exterior dimensions Height × Width × Depth			**mm**	**Unit 248 × 570 × 570 Panel 35 × 700 × 700**	**845 × 970 × 370**
Net weight			**kg**	**19.5 (Unit:16 Panel:3.5)**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**50 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:13.5 Me:11.5 Lo:10 Mild mode Hi:11.5 Me:10 Lo:8**	**Cooling:75, Heating:73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (TC-PSA-24W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDTCVA402HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item		Model	FDTCVA402HESP2R	
			FDTCA201R	FDCVA402HESAR
Nominal cooling capacity(1)		kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)		kW	**11.2 [5.6~12.5]**	
Power source			**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**2.84/2.84**	
	Running current (Cooling)	A	**4.2/4.4**	
	Power factor (Cooling)	%	**98/98**	
	Heating power consumption	kW	**3.08/3.08**	
	Running current (Heating)	A	**4.5/4.8**	
	Power factor (Heating)	%	**99/97**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:46 Me:42 Lo:38 Mild mode Hi:42 Me:38 Lo:35	50
Exterior dimensions Height × Width × Depth		**mm**	**Unit 248 × 570 × 570 Panel 35 × 700 × 700**	**845 × 970 × 370**
Net weight		**kg**	**19.5 (Unit:16 Panel:3.5)**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE31 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**50 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:13.5 Me:11.5 Lo:10 Mild mode Hi:11.5 Me:10 Lo:8**	**Cooling:75, Heating:73**
Outside air intake			Available	–
Air filter, Q'ty			Plastic net (washable) × 1	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**	**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line		**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel (TC-PSA-24W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(c) Triple type

Model FDTCVA602HENT2R (Indoor unit: 3 units, Outdoor unit: 1 unit)

Item		Model	FDTCVA602HENT2R	
			FDTCA201R	FDCVA602HENAR
Nominal cooling capacity(1)		kW	**14.0 [6.7~14.8]**	
Nominal heating capacity(1)		kW	**16.0 [6.3~16.8]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**4.64/4.64**	
	Running current (Cooling)	A	**20.4/21.3**	
	Power factor (Cooling)	%	**99/99**	
	Heating power consumption	kW	**4.52/4.52**	
	Running current (Heating)	A	**20.0/20.9**	
	Power factor (Heating)	%	**98/98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:46 Me:42 Lo:38 Mild mode Hi:42 Me:38 Lo:35	53
Exterior dimensions Height × Width × Depth		**mm**	**Unit 248 × 570 × 570 Panel 35 × 700 × 700**	**845 × 970 × 370**
Net weight		**kg**	**19.5 (Unit:16 Panel:3.5)**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MD11 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**50 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:13.5 Me:11.5 Lo:10 Mild mode Hi:11.5 Me:10 Lo:8**	**Cooling:75, Heating:73**
Outside air intake			Available	–
Air filter, Q'ty			Plastic net (washable) × 1	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**	**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line		**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel (TC-PSA-24W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

Model FDTCVA602HEST2R (Indoor unit: 3 units, Outdoor unit: 1 unit)

Item			Model	FDTCVA602HEST2R	
				FDTCA201R	FDCVA602HESAR
Nominal cooling capacity(1)			kW	**14.0 [6.7~14.8]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.8]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.64/4.64**	
	Running current (Cooling)		A	**6.8/7.1**	
	Power factor (Cooling)		%	**98/99**	
	Heating power consumption		kW	**4.52/4.52**	
	Running current (Heating)		A	**6.6/7.0**	
	Power factor (Heating)		%	**99/98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:46 Me:42 Lo:38 Mild mode Hi:42 Me:38 Lo:35	53
Exterior dimensions Height × Width × Depth			**mm**	**Unit 248 × 570 × 570 Panel 35 × 700 × 700**	**845 × 970 × 370**
Net weight			**kg**	**19.5 (Unit:16 Panel:3.5)**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**50 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:13.5 Me:11.5 Lo:10 Mild mode Hi:11.5 Me:10 Lo:8**	**Cooling:75, Heating:73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (TC-PSA-24W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

(2) Ceiling recessed type (FDT)

(a) Single type

Model FDTVA151HEN1R

Item		Model	FDTVA151HEN1R	
			FDTA151R	FDCVA151HENR
Nominal cooling capacity(1)		kW	**4.0 [1.8~4.7]**	
Nominal heating capacity(1)		kW	**4.5 [2.0~5.4]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.22/1.23**	
	Running current (Cooling)	A	**5.4/5.7**	
	Power factor (Cooling)	%	**98/98**	
	Heating power consumption	kW	**1.32/1.32**	
	Running current (Heating)	A	**5.9/6.2**	
	Power factor (Heating)	%	**97/97**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:36 Me:33 Lo:32 Mild mode Hi:33 Me:32 Lo:31	48
Exterior dimensions Height × Width × Depth		**mm**	**Unit 270 × 840 × 840 Panel 35 × 950 × 950**	**595 × 780 (+67) × 290**
Net weight		**kg**	**31 (Unit:24 Panel:7)**	**40**
Refrigerant equipment Compressor type & Q'ty			–	**5CS102XFD × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**14 × 1**	**34 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:18 Me:15 Lo:14 Mild mode Hi:15 Me:14 Lo:13**	**41**
Outside air intake			Available	–
Air filter, Q'ty			Plastic net (washable) × 1	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDTVA201HEN1R

Item			Model	FDTVA201HEN1R	
				FDTA201R	FDCVA201HENR
Nominal cooling capacity(1)		kW		**5.0 [2.2~5.6]**	
Nominal heating capacity(1)		kW		**5.4 [2.5~6.3]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**1.42/1.43**	
	Running current (Cooling)	A		**6.3/6.6**	
	Power factor (Cooling)	%		**98/98**	
	Heating power consumption	kW		**1.49/1.49**	
	Running current (Heating)	A		**6.6/6.9**	
	Power factor (Heating)	%		**98/98**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:36 Me:33 Lo:32 Mild mode Hi:33 Me:32 Lo:31	48
Exterior dimensions **Height × Width × Depth**		**mm**		**Unit 270 × 840 × 840** **Panel 35 × 950 × 950**	**595 × 780 (+67) × 290**
Net weight		**kg**		**31 (Unit:24 Panel:7)**	**40**
Refrigerant equipment **Compressor type & Q'ty**				–	**5CS102XFD × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.48 (RB68A)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor		W		**14 × 1**	**34 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:18 Me:15 Lo:14** **Mild mode Hi:15 Me:14 Lo:13**	**41**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data **Refrigerant piping size**		**mm (in)**		**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDTVA251HEN1R

Item		Model	FDTVA251HEN1R	
			FDTA251R	FDCVA251HENR
Nominal cooling capacity(1)		kW	**5.6 [2.8~6.3]**	
Nominal heating capacity(1)		kW	**6.7 [3.1~7.1]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.64/1.65**	
	Running current (Cooling)	A	**7.3/7.6**	
	Power factor (Cooling)	%	**98/99**	
	Heating power consumption	kW	**1.78/1.79**	
	Running current (Heating)	A	**7.9/8.4**	
	Power factor (Heating)	%	**98/97**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:38 Me:35 Lo:33 Mild mode Hi:35 Me:33 Lo:31	48
Exterior dimensions **Height × Width × Depth**		**mm**	**Unit 270 × 840 × 840** **Panel 35 × 950 × 950**	**595 × 780 (+67) × 290**
Net weight		**kg**	**31 (Unit:24 Panel:7)**	**40**
Refrigerant equipment **Compressor type & Q'ty**			–	**5CS102XFD × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.75 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**20 × 1**	**34 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:20 Me:17 Lo:15** **Mild mode Hi:17 Me:15 Lo:13**	**41**
Outside air intake			Available	–
Air filter, Q'ty			Plastic net (washable) × 1	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data **Refrigerant piping size**		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDTVA302HEN1R

Item		Model	FDTVA302HEN1R	
			FDTA301R	FDCVA302HENR
Nominal cooling capacity(1)		kW	**7.1[3.9~8.0]**	
Nominal heating capacity(1)		kW	**8.0[4.0~9.0]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.90/1.91**	
	Running current (Cooling)	A	**8.3/8.8**	
	Power factor (Cooling)	%	**99/99**	
	Heating power consumption	kW	**2.07/2.08**	
	Running current (Heating)	A	**9.0/9.6**	
	Power factor (Heating)	%	**99/98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:38 Me:35 Lo:33 Mild mode Hi:35 Me:33 Lo:31	48
Exterior dimensions Height × Width × Depth		**mm**	**Unit 270 × 840 × 840 Panel 35 × 950 × 950**	**750 × 880 (+88) × 340**
Net weight		**kg**	**31 (Unit:24 Panel:7)**	**60**
Refrigerant equipment Compressor type & Q'ty			–	**2YC45DXD × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**2.95 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.65 (FVC50K)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**20 × 1**	**120 × 1**
Starting method			Direct line start	
Air flow		**CMM**	**Powerful mode Hi:20 Me:17 Lo:15 Mild mode Hi:17 Me:15 Lo:13**	**Cooling:60 Heating:48.5**
Outside air intake			Available	–
Air filter, Q'ty			Plastic net (washable) × 1	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDTVA402HEN2R

Item			Model	FDTVA402HEN2R (5)	
				FDTA401R	FDCVA402HENAR
Nominal cooling capacity(1)		kW		**10.0 [6.1~11.2]**	
Nominal heating capacity(1)		kW		**11.2 [5.6~12.5]**	
Power source				**1 Phase, 220-240V 50Hz**	
Operation data(3)	Cooling power consumption	kW		**2.88**	
	Running current (Cooling)	A		**12.6**	
	Power factor (Cooling)	%		**99**	
	Heating power consumption	kW		**3.12**	
	Running current (Heating)	A		**13.7**	
	Power factor (Heating)	%		**99**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:46 Me:43 Lo:41 Mild mode Hi:43 Me:41 Lo:38	50
Exterior dimensions Height × Width × Depth		**mm**		**Unit 295 × 840 × 840 Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight		**kg**		**33 (Unit:26 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor		W		**40 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:25 Me:22 Lo:20 Mild mode Hi:22 Me:20 Lo:18**	**Cooling: 75, Heating: 73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**		**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Not available in 60Hz.

Model FDTVA402HES2R

Item		Model	FDTVA402HES2R (5)	
			FDTA401R	FDCVA402HESAR
Nominal cooling capacity(1)		kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)		kW	**11.2 [5.6~12.5]**	
Power source			**3 Phase, 380-415V 50Hz**	
Operation data(3)	Cooling power consumption	kW	**2.97**	
	Running current (Cooling)	A	**4.7**	
	Power factor (Cooling)	%	**91**	
	Heating power consumption	kW	**2.92**	
	Running current (Heating)	A	**4.6**	
	Power factor (Heating)	%	**92**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:46 Me:43 Lo:41 Mild mode Hi:43 Me:41 Lo:38	50
Exterior dimensions Height × Width × Depth		**mm**	**Unit 295 × 840 × 840 Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight		**kg**	**33 (Unit:26 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE31 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**40 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:25 Me:22 Lo:20 Mild mode Hi:22 Me:20 Lo:18**	**Cooling: 75, Heating: 73**
Outside air intake			Available	–
Air filter, Q'ty			Plastic net (washable) × 1	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Not available in 60Hz.

Model FDTAV502HEN2R

Item			Model	FDTVA502HEN2R	
				FDTA501R	FDCVA502HENAR
Nominal cooling capacity(1)		kW		**12.5 [6.5~14.0]**	
Nominal heating capacity(1)		kW		**14.0 [6.2~16.0]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**4.05/4.05**	
	Running current (Cooling)	A		**17.7/18.6**	
	Power factor (Cooling)	%		**99/99**	
	Heating power consumption	kW		**3.97/3.97**	
	Running current (Heating)	A		**17.4/18.2**	
	Power factor (Heating)	%		**99/99**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:48 Me:45 Lo:43 Mild mode Hi:45 Me:43 Lo:40	52
Exterior dimensions Height × Width × Depth		**mm**		**Unit 365 × 840 × 840 Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight		**kg**		**33 (Unit:31 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor		W		**120 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:32 Me:29 Lo:26 Mild mode Hi:29 Me:26 Lo:23**	**Cooling: 75, Heating: 73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**		**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDTAV502HES2R

Item			Model	FDTVA502HES2R	
				FDTA501R	FDCVA502HESAR
Nominal cooling capacity(1)		kW		**12.5 [6.5~14.0]**	
Nominal heating capacity(1)		kW		**14.0 [6.2~16.0]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**4.05/4.05**	
	Running current (Cooling)	A		**5.9/6.3**	
	Power factor (Cooling)	%		**99/98**	
	Heating power consumption	kW		**3.97/3.97**	
	Running current (Heating)	A		**5.8/6.3**	
	Power factor (Heating)	%		**99/96**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:48 Me:45 Lo:43 Mild mode Hi:45 Me:43 Lo:40	52
Exterior dimensions **Height × Width × Depth**		**mm**		**Unit 365 × 840 × 840** **Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight		**kg**		**38 (Unit:31 Panel:7)**	**74**
Refrigerant equipment **Compressor type & Q'ty**				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor		W		**120 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:32 Me:29 Lo:26** **Mild mode Hi:29 Me:26 Lo:23**	**Cooling: 75, Heating: 73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data **Refrigerant piping size**		**mm (in)**		**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDTVA602HEN2R

Item		Model	FDTVA602HEN2R	
			FDTA601R	FDCVA602HENAR
Nominal cooling capacity(1)		kW	**14.0 [6.7~14.8]**	
Nominal heating capacity(1)		kW	**16.0 [6.3~16.8]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**4.65/4.65**	
	Running current (Cooling)	A	**20.4/21.3**	
	Power factor (Cooling)	%	**99/99**	
	Heating power consumption	kW	**4.54/4.54**	
	Running current (Heating)	A	**20.0/20.9**	
	Power factor (Heating)	%	**99/99**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:48 Me:45 Lo:43 Mild mode Hi:45 Me:43 Lo:40	53
Exterior dimensions Height × Width × Depth		**mm**	**Unit 365 × 840 × 840 Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight		**kg**	**38 (Unit:31 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE21 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**120 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:34 Me:30 Lo:26 Mild mode Hi:30 Me:26 Lo:23**	**Cooling: 75, Heating: 73**
Outside air intake			Available	–
Air filter, Q'ty			Plastic net (washable) × 1	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDTVA602HES2R

Item			Model	FDTVA602HES2R	
				FDTA601R	FDCVA602HESAR
Nominal cooling capacity(1)		kW		**14.0 [6.7~14.8]**	
Nominal heating capacity(1)		kW		**16.0 [6.3~16.8]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**4.65/4.65**	
	Running current (Cooling)	A		**6.8/7.3**	
	Power factor (Cooling)	%		**99/97**	
	Heating power consumption	kW		**4.54/4.54**	
	Running current (Heating)	A		**6.7/7.4**	
	Power factor (Heating)	%		**98/93**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:48 Me:45 Lo:43 Mild mode Hi:45 Me:43 Lo:40	53
Exterior dimensions **Height × Width × Depth**		**mm**		**Unit 365 × 840 × 840** **Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight		**kg**		**38 (Unit:31 Panel:7)**	**74**
Refrigerant equipment **Compressor type & Q'ty**				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor		W		**120 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:34 Me:30 Lo:26** **Mild mode Hi:30 Me:26 Lo:23**	**Cooling: 75, Heating: 73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data **Refrigerant piping size**		**mm (in)**		**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(b) Twin type

Model FDTVA302HENP1R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDTVA302HENP1R	
				FDTA151R	FDCVA302HENR
Nominal cooling capacity(1)			kW	**7.1[3.9~8.0]**	
Nominal heating capacity(1)			kW	**8.0[4.0~9.0]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**1.85/1.87**	
	Running current (Cooling)		A	**8.0/8.6**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**1.99/1.99**	
	Running current (Heating)		A	**8.7/9.1**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:36 Me:33 Lo:32 Mild mode Hi:33 Me:32 Lo:31	48
Exterior dimensions Height × Width × Depth			**mm**	**Unit 270 × 840 × 840 Panel 30 × 950 × 950**	**750 × 880 (+88) × 340**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**60**
Refrigerant equipment Compressor type & Q'ty				–	**2YC45DXD × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**2.95 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.65 (FVC50K)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**14 × 1**	**120 × 1**
Starting method				Direct line start	
Air flow			**CMM**	**Powerful mode Hi:18 Me:15 Lo:14 Mild mode Hi:15 Me:14 Lo:13**	**Cooling:60 Heating:48.5**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDTVA402HENP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item		Model	FDTVA402HENP2R(6)	
			FDTA201R	FDCVA402HENAR
Nominal cooling capacity(1)		kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)		kW	**11.2 [5.6~12.5]**	
Power source			**1 Phase, 220-240V 50Hz**	
Operation data(3)	Cooling power consumption	kW	**2.94/2.96**	
	Running current (Cooling)	A	**12.9/13.7**	
	Power factor (Cooling)	%	**99/98**	
	Heating power consumption	kW	**3.09/3.09**	
	Running current (Heating)	A	**13.6/14.2**	
	Power factor (Heating)	%	**99/99**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:36 Me:33 Lo:32 Mild mode Hi:33 Me:32 Lo:31	50
Exterior dimensions Height × Width × Depth		**mm**	**Unit 270 × 840 × 840 Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight		**kg**	**31 (Unit:24 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE21 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Turbo fan × 1	Propeller fan × 1
Motor		W	**14 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:18 Me:15 Lo:14 Mild mode Hi:15 Me:14 Lo:13**	**Cooling: 75, Heating: 73**
Outside air intake			Available	–
Air filter, Q'ty			Plastic net (washable) × 1	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**	**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line		**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) Not available in 60Hz.

Model FDTVA402HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDTVA402HESP2R	
				FDTA201R	FDCVA402HESAR
Nominal cooling capacity(1)			kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)			kW	**11.2 [5.6~12.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**2.94/2.96**	
	Running current (Cooling)		A	**4.3/4.6**	
	Power factor (Cooling)		%	**99/98**	
	Heating power consumption		kW	**3.09/3.09**	
	Running current (Heating)		A	**4.5/4.8**	
	Power factor (Heating)		%	**99/98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:36 Me:33 Lo:32 Mild mode Hi:33 Me:32 Lo:31	50
Exterior dimensions Height × Width × Depth			**mm**	**Unit 270 × 840 × 840 Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**14 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:18 Me:15 Lo:14 Mild mode Hi:15 Me:14 Lo:13**	**Cooling: 75, Heating: 73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDTVA502HENP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDTVA502HENP2R	
				FDTA251R	FDCVA502HENAR
Nominal cooling capacity(1)			kW	**12.5 [6.5~14.0]**	
Nominal heating capacity(1)			kW	**14.0 [6.2~16.0]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.29/4.31**	
	Running current (Cooling)		A	**18.9/20.0**	
	Power factor (Cooling)		%	**99/98**	
	Heating power consumption		kW	**4.13/4.15**	
	Running current (Heating)		A	**18.2/19.2**	
	Power factor (Heating)		%	**99/98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:38 Me:35 Lo:33 Mild mode Hi:35 Me:33 Lo:31	52
Exterior dimensions Height × Width × Depth			**mm**	**Unit 270 × 840 × 840 Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**20 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:20 Me:17 Lo:15 Mild mode Hi:17 Me:15 Lo:13**	**Cooling: 75, Heating: 73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDTVA502HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDTVA502HESP2R	
				FDTA251R	FDCVA502HESAR
Nominal cooling capacity(1)			kW	**12.5 [6.5~14.0]**	
Nominal heating capacity(1)			kW	**14.0 [6.2~16.0]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.29/4.31**	
	Running current (Cooling)		A	**6.3/6.7**	
	Power factor (Cooling)		%	**98/98**	
	Heating power consumption		kW	**4.13/4.15**	
	Running current (Heating)		A	**6.1/6.4**	
	Power factor (Heating)		%	**98/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:38 Me:35 Lo:33 Mild mode Hi:35 Me:33 Lo:31	52
Exterior dimensions Height × Width × Depth			**mm**	**Unit 270 × 840 × 840 Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**20 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:20 Me:17 Lo:15 Mild mode Hi:17 Me:15 Lo:13**	**Cooling: 75, Heating: 73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDTVA602HENP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDTVA602HENP2R	
				FDTA301R	FDCVA602HENAR
Nominal cooling capacity(1)			kW	**14.0 [7.0~14.5]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.5]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.69/4.71**	
	Running current (Cooling)		A	**20.5/21.6**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**4.58/4.60**	
	Running current (Heating)		A	**20.1/21.2**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:38 Me:35 Lo:33 Mild mode Hi:35 Me:33 Lo:31	53
Exterior dimensions Height × Width × Depth			**mm**	**Unit 270 × 840 × 840 Panel 30 × 950 × 950**	**845 × 970 × 370**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**20 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:20 Me:17 Lo:15 Mild mode Hi:17 Me:15 Lo:13**	**Cooling: 75, Heating: 73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDTVA602HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDTVA602HESP2R	
				FDTA301R	FDCVA602HESAR
Nominal cooling capacity(1)			kW	**14.0 [7.0~14.5]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.69/4.71**	
	Running current (Cooling)		A	**6.9/7.2**	
	Power factor (Cooling)		%	**98/99**	
	Heating power consumption		kW	**4.58/4.60**	
	Running current (Heating)		A	**6.7/7.1**	
	Power factor (Heating)		%	**99/98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:38 Me:35 Lo:33 Mild mode Hi:35 Me:33 Lo:31	53
Exterior dimensions Height × Width × Depth			**mm**	**Unit 270 × 840 × 840 Panel 30 × 950 × 950**	**845 × 970 × 370**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**20 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:20 Me:17 Lo:15 Mild mode Hi:17 Me:15 Lo:13**	**Cooling: 75, Heating: 73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDTVA802HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDTVA802HESP2R(7)	
				FDTA401R	FDCVA802HESAR
Nominal cooling capacity(1)			kW	**20.0 [7.0~22.4]**	
Nominal heating capacity(1)			kW	**22.4 [7.6~25.0]**	
Power source				**3 Phase, 380-415V 50Hz**	
Operation data(3)	Cooling power consumption		kW	**6.60**	
	Running current (Cooling)		A	**9.9**	
	Power factor (Cooling)		%	**96**	
	Heating power consumption		kW	**6.46**	
	Running current (Heating)		A	**9.8**	
	Power factor (Heating)		%	**95**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:46 Me:43 Lo:41 Mild mode Hi:43 Me:41 Lo:38	57
Exterior dimensions Height × Width × Depth			**mm**	**Unit 295 × 840 × 840 Panel 35 × 950 × 950**	**1300 × 970 × 370**
Net weight			**kg**	**33 (Unit:26 Panel:7)**	**122**
Refrigerant equipment Compressor type & Q'ty				–	**GT-C5150ND79 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**5.4 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.45 (M-MA32R)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 2
Motor			W	**40 × 1**	**120 × 2**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:25 Me:22 Lo:20 Mild mode Hi:22 Me:20 Lo:18**	**Cooling: 150, Heating: 145**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	40 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line(6)			**Indoor branch pipe: ϕ15.88 (5/8″), Outdoor main pipe: ϕ25.4 (1″)**	
Connecting method				**Flare piping (Outdoor gas piping: Brazing)**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose, Reducer kit (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

(7) Not available in 60Hz.

Model FDTVA1002HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDTVA1002HESP2R	
				FDTA501R	FDCVA1002HESAR
Nominal cooling capacity(1)			kW	**25.0 [10.6~28.0]**	
Nominal heating capacity(1)			kW	**28.0 [9.5~31.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**8.12/8.12**	
	Running current (Cooling)		A	**12.2/12.8**	
	Power factor (Cooling)		%	**96/96**	
	Heating power consumption		kW	**7.75/7.75**	
	Running current (Heating)		A	**11.8/12.3**	
	Power factor (Heating)		%	**95/96**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:48 Me:45 Lo:43 Mild mode Hi:45 Me:43 Lo:40	Cooling:57, Heating: 58
Exterior dimensions Height × Width × Depth			**mm**	**Unit 365 × 840 × 840 Panel 35 × 950 × 950**	**1505 × 970 × 370**
Net weight			**kg**	**38 (Unit:31 Panel:7)**	**140**
Refrigerant equipment Compressor type & Q'ty				–	**GT-C5150ND79 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**7.2 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.45 (M-MA32R)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 2
Motor			W	**120 × 1**	**120 × 2**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:32 Me:29 Lo:26 Mild mode Hi:29 Me:26 Lo:23**	**Cooling: 150, Heating: 145**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	40 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe: ϕ9.52 (3/8″), Outdoor main pipe: ϕ12.7 (1/2″)**	
	Gas line(6)			**Indoor branch pipe: ϕ15.88 (5/8″), Outdoor main pipe: ϕ25.4 (1″)**	
Connecting method				**Flare piping (Outdoor gas piping: Brazing)**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

(c) Triple type

Model FDTVA602HENT2R (Indoor unit: 3 units, Outdoor unit: 1 unit)

Item			Model	FDTVA602HENT2R	
				FDTA201R	FDCVA602HENAR
Nominal cooling capacity(1)			kW	**14.0 [7.0~14.5]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.5]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.74/4.77**	
	Running current (Cooling)		A	**20.8/22.1**	
	Power factor (Cooling)		%	**99/98**	
	Heating power consumption		kW	**4.63/4.63**	
	Running current (Heating)		A	**20.3/21.2**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:36 Me:33 Lo:32 Mild mode Hi:33 Me:32 Lo:31	53
Exterior dimensions Height × Width × Depth			**mm**	**Unit 270 × 840 × 840 Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**14 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:18 Me:15 Lo:14 Mild mode Hi:15 Me:14 Lo:13**	**Cooling: 75, Heating: 73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

Model FDTVA602HEST2R (Indoor unit: 3 units, Outdoor unit: 1 unit)

Item			Model	FDTVA602HEST2R	
				FDTA201R	FDCVA602HESAR
Nominal cooling capacity(1)			kW	**14.0 [7.0~14.5]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.74/4.77**	
	Running current (Cooling)		A	**6.9/7.4**	
	Power factor (Cooling)		%	**99/98**	
	Heating power consumption		kW	**4.63/4.63**	
	Running current (Heating)		A	**6.8/7.1**	
	Power factor (Heating)		%	**98/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:36 Me:33 Lo:32 Mild mode Hi:33 Me:32 Lo:31	53
Exterior dimensions Height × Width × Depth			**mm**	**Unit 270 × 840 × 840 Panel 35 × 950 × 950**	**845 × 970 × 370**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 1
Motor			W	**14 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:18 Me:15 Lo:14 Mild mode Hi:15 Me:14 Lo:13**	**Cooling: 75, Heating: 73**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

Model FDTVA802HEST2R (Indoor unit: 3 units, Outdoor unit: 1 unit)

Item			Model	FDTVA802HEST2R	
				FDTA301R	FDCVA802HESAR
Nominal cooling capacity(1)			kW	**20.0 [7.0~22.4]**	
Nominal heating capacity(1)			kW	**22.4 [7.6~25.0]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**6.72/6.75**	
	Running current (Cooling)		A	**10.0/10.8**	
	Power factor (Cooling)		%	**97/95**	
	Heating power consumption		kW	**6.57/6.60**	
	Running current (Heating)		A	**10.0/10.8**	
	Power factor (Heating)		%	**95/93**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:38 Me:35 Lo:33 Mild mode Hi:35 Me:33 Lo:31	57
Exterior dimensions Height × Width × Depth			**mm**	**Unit 270 × 840 × 840 Panel 35 × 950 × 950**	**1300 × 970 × 370**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**122**
Refrigerant equipment Compressor type & Q'ty				–	**GT-C5150ND79 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**5.4 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.45 (M-MA32R)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 2
Motor			W	**20 × 1**	**120 × 2**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:20 Me:17 Lo:15 Mild mode Hi:17 Me:15 Lo:13**	**Cooling: 150, Heating: 145**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	40 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line (6)			**Indoor branch pipe: ϕ15.88 (5/8″), Outdoor main pipe: ϕ25.4 (1″)**	
Connecting method				**Flare piping (Outdoor gas piping: Brazing)**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

(6) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

(d) Double twin type

Model FDTVA802HESD2R (Indoor unit: 4 units, Outdoor unit: 1 unit)

Item			Model	FDTVA802HESD2R	
				FDTA201R	FDCVA802HESAR
Nominal cooling capacity(1)			kW	**20.0 [7.0~22.4]**	
Nominal heating capacity(1)			kW	**22.4 [7.6~25.0]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**6.75/6.79**	
	Running current (Cooling)		A	**10.1/11.0**	
	Power factor (Cooling)		%	**96/94**	
	Heating power consumption		kW	**6.63/6.63**	
	Running current (Heating)		A	**10.2/10.7**	
	Power factor (Heating)		%	**94/94**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:36 Me:33 Lo:32 Mild mode Hi:33 Me:32 Lo:31	57
Exterior dimensions Height × Width × Depth			**mm**	**Unit 270 × 840 × 840 Panel 35 × 950 × 950**	**1300 × 970 × 370**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**122**
Refrigerant equipment Compressor type & Q'ty				–	**GT-C5150ND79 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**5.4 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.45 (M-MA32R)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 2
Motor			W	**14 × 1**	**120 × 2**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:18 Me:15 Lo:14 Mild mode Hi:15 Me:14 Lo:13**	**Cooling: 150, Heating: 145**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	40 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line(6)			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ25.4 (1″)**	
Connecting method				**Flare piping (Outdoor gas piping: Brazing)**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where four indoor units are combined and run together.

(6) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

Model FDTVA1002HESD2R (Indoor unit: 4 units, Outdoor unit: 1 unit)

Item			Model	FDTVA1002HESD2R	
				FDTA251R	FDCVA1002HESAR
Nominal cooling capacity(1)			kW	**25.0 [10.6~28.0]**	
Nominal heating capacity(1)			kW	**28.0 [9.5~31.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**8.86/8.90**	
	Running current (Cooling)		A	**13.3/14.3**	
	Power factor (Cooling)		%	**96/95**	
	Heating power consumption		kW	**8.43/8.47**	
	Running current (Heating)		A	**12.9/13.9**	
	Power factor (Heating)		%	**94/93**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:38 Me:35 Lo:33 Mild mode Hi:35 Me:33 Lo:31	Cooling:57, Heating: 58
Exterior dimensions Height × Width × Depth			**mm**	**Unit 270 × 840 × 840 Panel 35 × 950 × 950**	**1505 × 970 × 370**
Net weight			**kg**	**31 (Unit:24 Panel:7)**	**140**
Refrigerant equipment Compressor type & Q'ty				–	**GT-C5150ND79 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**7.2 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.45 (M-MA32R)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Turbo fan × 1	Propeller fan × 2
Motor			W	**20 × 1**	**120 × 2**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:20 Me:17 Lo:15 Mild mode Hi:17 Me:15 Lo:13**	**Cooling: 150, Heating: 145**
Outside air intake				Available	–
Air filter, Q'ty				Plastic net (washable) × 1	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCN-T-35W-ER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe: ϕ9.52 (3/8″), Outdoor main pipe: ϕ12.7 (1/2″)**	
	Gas line(6)			**Indoor branch pipe: ϕ15.88 (5/8″), Outdoor main pipe: ϕ25.4 (1″)**	
Connecting method				**Flare piping (Outdoor gas piping: Brazing)**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts				Decorative Panel (T-PSA-35W-ER)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where four indoor units are combined and run together.

(6) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

(3) Ceiling suspended type (FDEN)

(a) Single type

Model FDENVA151HEN1R

Item			Model	FDENVA151HEN1R	
				FDENA151R	FDCVA151HENR
Nominal cooling capacity(1)		kW		**3.8 [1.8~4.7]**	
Nominal heating capacity(1)		kW		**4.5 [2.0~5.4]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**1.18/1.18**	
	Running current (Cooling)	A		**5.3/5.5**	
	Power factor (Cooling)	%		**97/98**	
	Heating power consumption	kW		**1.32/1.32**	
	Running current (Heating)	A		**5.9/6.2**	
	Power factor (Heating)	%		**97/97**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:42 Me:39 Lo:38 Mild mode Hi:39 Me:38 Lo:37	48
Exterior dimensions **Height × Width × Depth**		**mm**		**210 × 1070 × 690**	**595 × 780 (+67) × 290**
Net weight		**kg**		**30**	**40**
Refrigerant equipment **Compressor type & Q'ty**				–	**5CS102XFD × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.48 (RB68A)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 1
Motor		W		**30 × 1**	**34 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:12 Me:11 Lo:9** **Mild mode Hi:11 Me:9 Lo:7**	**41**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data **Refrigerant piping size**		**mm (in)**		**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDENVA201HEN1R

Item		Model	FDENVA201HEN1R	
			FDENA201R	FDCVA201HENR
Nominal cooling capacity(1)		kW	**5.0 [2.2~5.6]**	
Nominal heating capacity(1)		kW	**5.4 [2.5~6.3]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.54/1.54**	
	Running current (Cooling)	A	**6.9/7.2**	
	Power factor (Cooling)	%	**97/97**	
	Heating power consumption	kW	**1.57/1.57**	
	Running current (Heating)	A	**7.0/7.3**	
	Power factor (Heating)	%	**98/98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:42 Me:39 Lo:38 Mild mode Hi:39 Me:38 Lo:37	48
Exterior dimensions Height × Width × Depth		**mm**	**210 × 1070 × 690**	**595 × 780 (+67) × 290**
Net weight		**kg**	**30**	**40**
Refrigerant equipment Compressor type & Q'ty			–	**5CS102XFD × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1
Motor		W	**30 × 1**	**34 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:12 Me:11 Lo:9** **Mild mode Hi:11 Me:9 Lo:7**	**41**
Outside air intake			Unavailable	–
Air filter, Q'ty			Plastic net (washable) × 2	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDENVA251HEN1R

Item		Model	FDENVA251HEN1R	
			FDENA251R	FDCVA251HENR
Nominal cooling capacity(1)		kW	**5.6 [2.8~6.3]**	
Nominal heating capacity(1)		kW	**6.7 [3.1~7.1]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.74/1.74**	
	Running current (Cooling)	A	**7.8/8.2**	
	Power factor (Cooling)	%	**97/96**	
	Heating power consumption	kW	**1.87/1.87**	
	Running current (Heating)	A	**8.3/8.7**	
	Power factor (Heating)	%	**98/98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:44 Me:41 Lo:39 Mild mode Hi:41 Me:39 Lo:38	48
Exterior dimensions Height × Width × Depth		**mm**	**210 × 1320 × 690**	**595 × 780 (+67) × 290**
Net weight		**kg**	**36**	**40**
Refrigerant equipment Compressor type & Q'ty			–	**5CS102XFD × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.75 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 4	Propeller fan × 1
Motor		W	**20 × 2**	**34 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:20 Me:18 Lo:14** **Mild mode Hi:18 Me:14 Lo:12**	**41**
Outside air intake			Unavailable	–
Air filter, Q'ty			Plastic net (washable) × 2	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDENVA302HEN1R

Item		Model	FDENVA302HEN1R	
			FDENA301R	FDCVA302HENR
Nominal cooling capacity(1)		kW	**7.1[3.5~8.0]**	
Nominal heating capacity(1)		kW	**8.0[4.0~9.0]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**2.06/2.06**	
	Running current (Cooling)	A	**9.1/9.5**	
	Power factor (Cooling)	%	**98/99**	
	Heating power consumption	kW	**2.21/2.21**	
	Running current (Heating)	A	**9.8/10.2**	
	Power factor (Heating)	%	**98/98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:44 Me:41 Lo:39 Mild mode Hi:41 Me:39 Lo:38	48
Exterior dimensions Height × Width × Depth		**mm**	**210 × 1320 × 690**	**750 × 880 (+88) × 340**
Net weight		**kg**	**36**	**60**
Refrigerant equipment Compressor type & Q'ty			–	**2YC45DXD × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**2.95 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.65 (FVC50K)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 4	Propeller fan × 1
Motor		W	**25 × 2**	**120 × 1**
Starting method			Direct line start	
Air flow		**CMM**	**Powerful mode Hi:20 Me:18 Lo:14** **Mild mode Hi:18 Me:14 Lo:12**	**Cooling:60 Heating:48.5**
Outside air intake			Unavailable	–
Air filter, Q'ty			Plastic net (washable) × 2	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

Model FDENVA402HEN2R

Item			Model	FDENVA402HEN2R	
				FDENA401R	FDCVA402HENAR
Nominal cooling capacity(1)		kW		**10.0 [6.1~11.2]**	
Nominal heating capacity(1)		kW		**11.2 [5.9~12.5]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**2.85/2.85**	
	Running current (Cooling)	A		**12.5/13.1**	
	Power factor (Cooling)	%		**99/99**	
	Heating power consumption	kW		**2.97/2.97**	
	Running current (Heating)	A		**13.0/13.6**	
	Power factor (Heating)	%		**99/99**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:46 Me:44 Lo:41 Mild mode Hi:44 Me:41 Lo:39	50
Exterior dimensions Height × Width × Depth		**mm**		**250 × 1620 × 690**	**845 × 970 × 370**
Net weight		**kg**		**46**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 1
Motor		W		**40 × 2**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:29 Me:26 Lo:23** **Mild mode Hi:26 Me:23 Lo:21**	**Cooling: 75, Heating: 73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**		**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDENVA402HES2R

Item			Model	FDENVA402HES2R	
				FDENA401R	FDCVA402HESAR
Nominal cooling capacity(1)		kW		**10.0 [6.1~11.2]**	
Nominal heating capacity(1)		kW		**11.2 [5.9~12.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**2.85/2.85**	
	Running current (Cooling)	A		**4.2/4.4**	
	Power factor (Cooling)	%		**98/98**	
	Heating power consumption	kW		**2.97/2.97**	
	Running current (Heating)	A		**4.3/4.6**	
	Power factor (Heating)	%		**99/98**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:46 Me:44 Lo:41 Mild mode Hi:44 Me:41 Lo:39	50
Exterior dimensions Height × Width × Depth		**mm**		**250 × 1620 × 690**	**845 × 970 × 370**
Net weight		**kg**		**46**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 1
Motor		W		**40 × 2**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:29 Me:26 Lo:23** **Mild mode Hi:26 Me:23 Lo:21**	**Cooling: 75, Heating: 73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**		**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDENVA502HEN2R

Item		Model	FDENVA502HEN2R	
			FDENA501R	FDCVA502HENAR
Nominal cooling capacity(1)		kW	**12.5 [6.5~14.0]**	
Nominal heating capacity(1)		kW	**14.0 [6.2~16.0]**	
Power source			**1 Phase 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**4.35/4.35**	
	Running current (Cooling)	A	**19.2/20.1**	
	Power factor (Cooling)	%	**99/98**	
	Heating power consumption	kW	**3.95/3.95**	
	Running current (Heating)	A	**17.3/18.1**	
	Power factor (Heating)	%	**99/99**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:48 Me:46 Lo:44 Mild mode Hi:46 Me:44 Lo:43	52
Exterior dimensions Height × Width × Depth		**mm**	**250 × 1620 × 690**	**845 × 970 × 370**
Net weight		**kg**	**46**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE21 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 4	Propeller fan × 1
Motor		W	**45 × 2**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:31 Me:29 Lo:26** **Mild mode Hi:29 Me:26 Lo:23**	**Cooling: 75, Heating: 73**
Outside air intake			Unavailable	–
Air filter, Q'ty			Plastic net (washable) × 2	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDENVA502HES2R

Item			Model	FDENVA502HES2R	
				FDENA501R	FDCVA502HESAR
Nominal cooling capacity(1)		kW		**12.5 [6.5~14.0]**	
Nominal heating capacity(1)		kW		**14.0 [6.2~16.0]**	
Power source				**3 Phase 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**4.35/4.35**	
	Running current (Cooling)	A		**6.4/6.7**	
	Power factor (Cooling)	%		**98/99**	
	Heating power consumption	kW		**3.95/3.95**	
	Running current (Heating)	A		**5.8/6.1**	
	Power factor (Heating)	%		**98/98**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:48 Me:46 Lo:44 Mild mode Hi:46 Me:44 Lo:43	52
Exterior dimensions Height × Width × Depth		**mm**		**250 × 1620 × 690**	**845 × 970 × 370**
Net weight		**kg**		**46**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 1
Motor		W		**45 × 2**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:31 Me:29 Lo:26** **Mild mode Hi:29 Me:26 Lo:23**	**Cooling: 75, Heating: 73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**		**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDENVA602HEN2R

Item			Model	FDENVA602HEN2R	
				FDENA601R	FDCVA602HENAR
Nominal cooling capacity(1)		kW		**14.0 [6.7~14.5]**	
Nominal heating capacity(1)		kW		**16.0 [6.3~16.5]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**4.95/4.95**	
	Running current (Cooling)	A		**21.7/22.7**	
	Power factor (Cooling)	%		**99/99**	
	Heating power consumption	kW		**4.69/4.69**	
	Running current (Heating)	A		**20.5/21.5**	
	Power factor (Heating)	%		**99/99**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:48 Me:46 Lo:44 Mild mode Hi:46 Me:44 Lo:43	53
Exterior dimensions Height × Width × Depth		**mm**		**250 × 1620 × 690**	**845 × 970 × 370**
Net weight		**kg**		**46**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 1
Motor		W		**45 × 2**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:31 Me:29 Lo:26** **Mild mode Hi:29 Me:26 Lo:23**	**Cooling: 75, Heating: 73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**		**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDENVA602HES2R

Item			Model	FDENVA602HES2R	
				FDENA601R	FDCVA602HESAR
Nominal cooling capacity(1)		kW		**14.0 [6.7~14.5]**	
Nominal heating capacity(1)		kW		**16.0 [6.3~16.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**4.95/4.95**	
	Running current (Cooling)	A		**7.2/7.6**	
	Power factor (Cooling)	%		**99/99**	
	Heating power consumption	kW		**4.69/4.69**	
	Running current (Heating)	A		**6.8/7.2**	
	Power factor (Heating)	%		**99/99**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Powerful mode Hi:48 Me:46 Lo:44 Mild mode Hi:46 Me:44 Lo:43	53
Exterior dimensions Height × Width × Depth		**mm**		**250 × 1620 × 690**	**845 × 970 × 370**
Net weight		**kg**		**46**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 1
Motor		W		**45 × 2**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**Powerful mode Hi:31 Me:29 Lo:26** **Mild mode Hi:29 Me:26 Lo:23**	**Cooling: 75, Heating: 73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**		**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(b) Twin type

Model FDENVA302HENP1R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDENVA302HENP1R	
				FDENA151R	FDCVA302HENR
Nominal cooling capacity(1)			kW	**7.1[3.5~8.0]**	
Nominal heating capacity(1)			kW	**8.0[4.0~9.0]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**1.74/1.74**	
	Running current (Cooling)		A	**7.6/8.0**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**1.84/1.84**	
	Running current (Heating)		A	**8.0/8.5**	
	Power factor (Heating)		%	**99/98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:42 Me:39 Lo:38 Mild mode Hi:39 Me:38 Lo:37	48
Exterior dimensions Height × Width × Depth			**mm**	**210 × 1070 × 690**	**750 × 880 (+88) × 340**
Net weight			**kg**	**30**	**60**
Refrigerant equipment Compressor type & Q'ty				–	**2YC45DXD × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**2.95 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.65 (FVC50K)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 1
Motor			W	**30 × 1**	**120 × 1**
Starting method				Direct line start	
Air flow			**CMM**	**Powerful mode Hi:12 Me:11 Lo:9** **Mild mode Hi:11 Me:9 Lo:7**	**Cooling:60 Heating:48.5**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe,Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe:ϕ15.88(5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics value are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDENVA402HENP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDENVA402HENP2R	
				FDENA201R	FDCVA402HENAR
Nominal cooling capacity(1)			kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)			kW	**11.2 [5.9~12.5]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**2.78/2.78**	
	Running current (Cooling)		A	**12.2/12.8**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**2.94/2.94**	
	Running current (Heating)		A	**12.9/13.5**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:42 Me:39 Lo:38 Mild mode Hi:39 Me:38 Lo:37	50
Exterior dimensions Height × Width × Depth			**mm**	**210 × 1070 × 690**	**845 × 970 × 370**
Net weight			**kg**	**30**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 1
Motor			W	**30 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:12 Me:11 Lo:9** **Mild mode Hi:11 Me:9 Lo:7**	**Cooling: 75, Heating: 73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDENVA402HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDENVA402HESP2R	
				FDENA201R	FDCVA402HESAR
Nominal cooling capacity(1)			kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)			kW	**11.2 [5.9~12.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**2.78/2.78**	
	Running current (Cooling)		A	**4.1/4.3**	
	Power factor (Cooling)		%	**98/98**	
	Heating power consumption		kW	**2.94/2.94**	
	Running current (Heating)		A	**4.3/4.5**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:42 Me:39 Lo:38 Mild mode Hi:39 Me:38 Lo:37	50
Exterior dimensions Height × Width × Depth			**mm**	**210 × 1070 × 690**	**845 × 970 × 370**
Net weight			**kg**	**30**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 1
Motor			W	**30 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:12 Me:11 Lo:9** **Mild mode Hi:11 Me:9 Lo:7**	**Cooling: 75, Heating: 73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D.20mm, O.D.26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDENVA502HENP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDENVA502HENP2R	
				FDENA251R	FDCVA502HENAR
Nominal cooling capacity(1)			kW	**12.5 [6.5~14.0]**	
Nominal heating capacity(1)			kW	**14.0 [6.2~16.0]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.23/4.23**	
	Running current (Cooling)		A	**18.5/19.4**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**3.83/3.83**	
	Running current (Heating)		A	**16.8/17.6**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:44 Me:41 Lo:39 Mild mode Hi:41 Me:39 Lo:38	52
Exterior dimensions Height × Width × Depth			**mm**	**210 × 1320 × 690**	**845 × 970 × 370**
Net weight			**kg**	**36**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 1
Motor			W	**20 × 2**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:20 Me:18 Lo:14** **Mild mode Hi:18 Me:14 Lo:12**	**Cooling:75, Heating:73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D. 20mm, O.D. 26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDENVA502HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDENVA502HESP2R	
				FDENA251R	FDCVA502HESAR
Nominal cooling capacity(1)			kW	**12.5 [6.5~14.0]**	
Nominal heating capacity(1)			kW	**14.0 [6.2~16.0]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.23/4.23**	
	Running current (Cooling)		A	**6.2/6.5**	
	Power factor (Cooling)		%	**98/99**	
	Heating power consumption		kW	**3.83/3.83**	
	Running current (Heating)		A	**5.6/5.9**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:44 Me:41 Lo:39 Mild mode Hi:41 Me:39 Lo:38	52
Exterior dimensions Height × Width × Depth			**mm**	**210 × 1320 × 690**	**845 × 970 × 370**
Net weight			**kg**	**36**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 1
Motor			W	**20 × 2**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:20 Me:18 Lo:14** **Mild mode Hi:18 Me:14 Lo:12**	**Cooling:75, Heating:73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D. 20mm, O.D. 26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDENVA602HENP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDENVA602HENP2R	
				FDENA301R	FDCVA602HENAR
Nominal cooling capacity(1)			kW	**14.0 [6.7~14.5]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.5]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.84/4.84**	
	Running current (Cooling)		A	**21.2/22.2**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**4.59/4.59**	
	Running current (Heating)		A	**20.1/21.0**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:44 Me:41 Lo:39 Mild mode Hi:41 Me:39 Lo:38	53
Exterior dimensions Height × Width × Depth			**mm**	**210 × 1320 × 690**	**845 × 970 × 370**
Net weight			**kg**	**36**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 1
Motor			W	**20 × 2**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:20 Me:18 Lo:14** **Mild mode Hi:18 Me:14 Lo:12**	**Cooling:75, Heating:73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D. 20mm, O.D. 26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDENVA602HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDENVA602HESP2R	
				FDENA301R	FDCVA602HESAR
Nominal cooling capacity(1)			kW	**14.0 [6.7~14.5]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.84/4.84**	
	Running current (Cooling)		A	**7.1/7.4**	
	Power factor (Cooling)		%	**98/99**	
	Heating power consumption		kW	**4.59/4.59**	
	Running current (Heating)		A	**6.7/7.1**	
	Power factor (Heating)		%	**99/98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:44 Me:41 Lo:39 Mild mode Hi:41 Me:39 Lo:38	53
Exterior dimensions Height × Width × Depth			**mm**	**210 × 1320 × 690**	**845 × 970 × 370**
Net weight			**kg**	**36**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 1
Motor			W	**20 × 2**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:20 Me:18 Lo:14** **Mild mode Hi:18 Me:14 Lo:12**	**Cooling:75, Heating:73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D. 20mm, O.D. 26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDENVA802HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDENVA802HESP2R	
				FDENA401R	FDCVA802HESAR
Nominal cooling capacity(1)			kW	**20.0 [7.0~22.4]**	
Nominal heating capacity(1)			kW	**22.4 [7.6~25.0]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**6.47/6.47**	
	Running current (Cooling)		A	**9.7/10.1**	
	Power factor (Cooling)		%	**96/97**	
	Heating power consumption		kW	**5.97/5.97**	
	Running current (Heating)		A	**9.1/9.5**	
	Power factor (Heating)		%	**95/95**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:46 Me:44 Lo:41 Mild mode Hi:44 Me:41 Lo:39	57
Exterior dimensions Height × Width × Depth			**mm**	**250 × 1620 × 690**	**1300 × 970 × 370**
Net weight			**kg**	**46**	**122**
Refrigerant equipment Compressor type & Q'ty				–	**GT-C5150ND79 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**5.4 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.45 (M-MA32R)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan × 2
Motor			W	**40 × 2**	**120 × 2**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:29 Me:26 Lo:23** **Mild mode Hi:26 Me:23 Lo:21**	**Cooling: 150, Heating: 145**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	40 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line(7)			**Indoor branch pipe:ϕ15.88 (5/8″), Outdoor main pipe: ϕ25.4 (1″)**	
Connecting method				**Flare piping (Outdoor gas piping: Brazing)**	
Drain hose				Connectable with VP20 (I.D. 20mm, O.D. 26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

(7) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

Model FDENVA1002HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item		Model	FDENVA1002HESP2R	
			FDENA501R	FDCVA1002HESAR
Nominal cooling capacity(1)		kW	**25.0 [10.6~28.0]**	
Nominal heating capacity(1)		kW	**28.0 [9.5~31.5]**	
Power source			**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**9.01/9.01**	
	Running current (Cooling)	A	**13.5/14.1**	
	Power factor (Cooling)	%	**96/97**	
	Heating power consumption	kW	**8.05/8.05**	
	Running current (Heating)	A	**12.2/12.8**	
	Power factor (Heating)	%	**95/96**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:48 Me:46 Lo:44 Mild mode Hi:46 Me:44 Lo:43	Cooling:57, Heating:58
Exterior dimensions Height × Width × Depth		**mm**	**250 × 1620 × 690**	**1505 × 970 × 370**
Net weight		**kg**	**46**	**140**
Refrigerant equipment Compressor type & Q'ty			–	**GT-C5150ND79 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**7.2 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.45 (M-MA32R)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 4	Propeller fan × 2
Motor		W	**45 × 2**	**120 × 2**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:31 Me:29 Lo:26** **Mild mode Hi:29 Me:26 Lo:23**	**Cooling: 150, Heating: 145**
Outside air intake			Unavailable	–
Air filter, Q'ty			Plastic net (washable) × 2	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	40 (Crank case heater)
Operation control Operation switch			Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**	**mm (in)**	**Indoor branch pipe: ϕ9.52 (3/8″), Outdoor main pipe: ϕ12.7 (1/2″)**	
	Gas line(7)		**Indoor branch pipe:ϕ15.88 (5/8″), Outdoor main pipe: ϕ25.4 (1″)**	
Connecting method			**Flare piping (Outdoor gas piping: Brazing)**	
Drain hose			Connectable with VP20 (I.D. 20mm, O.D. 26mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts			–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

(7) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

(c) Triple type

Model FDENVA602HEN T2R (Indoor unit: 3 units, Outdoor unit: 1 unit)

Item			Model	FDENVA602HENT2R	
				FDENA201R	FDCVA602HENAR
Nominal cooling capacity(1)			kW	**14.0 [6.7~14.5]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.5]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.85/4.85**	
	Running current (Cooling)		A	**21.2/22.2**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**4.58/4.58**	
	Running current (Heating)		A	**20.2/21.1**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:42 Me:39 Lo:38 Mild mode Hi:39 Me:38 Lo:37	53
Exterior dimensions Height × Width × Depth			**mm**	**210 × 1070 × 690**	**845 × 970 × 370**
Net weight			**kg**	**30**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 1
Motor			W	**30 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:12 Me:11 Lo:9** **Mild mode Hi:11 Me:9 Lo:7**	**Cooling: 75, Heating: 73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52(3/8″)**	
	Gas line			**Indoor branch pipe:ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D. 20mm, O.D. 26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDENVA602HEST2R (Indoor unit: 3 units, Outdoor unit: 1 unit)

Item			Model	FDENVA602HEST2R	
				FDENA201R	FDCVA602HESAR
Nominal cooling capacity(1)			kW	**14.0 [6.7~14.5]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.85/4.85**	
	Running current (Cooling)		A	**7.1/7.5**	
	Power factor (Cooling)		%	**99/98**	
	Heating power consumption		kW	**4.58/4.58**	
	Running current (Heating)		A	**6.7/7.0**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:42 Me:39 Lo:38 Mild mode Hi:39 Me:38 Lo:37	53
Exterior dimensions Height × Width × Depth			**mm**	**210 × 1070 × 690**	**845 × 970 × 370**
Net weight			**kg**	**30**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 1
Motor			W	**30 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:12 Me:11 Lo:9** **Mild mode Hi:11 Me:9 Lo:7**	**Cooling: 75, Heating: 73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52(3/8″)**	
	Gas line			**Indoor branch pipe:ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP20 (I.D. 20mm, O.D. 26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDENVA802HEST2R (Indoor unit: 3 units, Outdoor unit: 1 unit)

Item			Model	FDENVA802HEST2R	
				FDENA301R	FDCVA802HESAR
Nominal cooling capacity(1)			kW	**20.0 [7.0~22.4]**	
Nominal heating capacity(1)			kW	**22.4 [7.6~25.0]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**6.40/6.40**	
	Running current (Cooling)		A	**9.6/10.0**	
	Power factor (Cooling)		%	**96/97**	
	Heating power consumption		kW	**5.90/5.90**	
	Running current (Heating)		A	**9.0/9.4**	
	Power factor (Heating)		%	**95/95**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:44 Me:41 Lo:39 Mild mode Hi:41 Me:39 Lo:38	57
Exterior dimensions Height × Width × Depth			**mm**	**210 × 1320 × 690**	**1300 × 970 × 370**
Net weight			**kg**	**36**	**122**
Refrigerant equipment Compressor type & Q'ty				–	**GT-C5150ND79 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**5.4 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.45 (M-MA32R)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 4	Propeller fan ×2
Motor			W	**20 × 2**	**120 × 2**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:20 Me:18 Lo:14** **Mild mode Hi:18 Me:14 Lo:12**	**Cooling: 150, Heating: 145**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	40 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52(3/8″)**	
	Gas line(7)			**Indoor branch pipe:ϕ15.88 (5/8″), Outdoor main pipe: ϕ25.4(1″)**	
Connecting method				**Flare piping (Outdoor gas piping: Brazing)**	
Drain hose				Connectable with VP20 (I.D. 20mm, O.D. 26mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

(7) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

(4) Satellite ducted type (FDUM)

(a) single type

Model FDUMVA201HEN2R

Item		Model	FDUMVA201HEN2R	
			FDUMA202R	FDCVA201HENR
Nominal cooling capacity(1)		kW	**5.0 [2.2~5.6]**	
Nominal heating capacity(1)		kW	**5.4 [2.5~6.3]**	
Power source			**1 Phase, 220-240V, 50Hz/220V, 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.53/1.53**	
	Running current (Cooling)	A	**6.8/7.1**	
	Power factor (Cooling)	%	**98/98**	
	Heating power consumption	kW	**1.58/1.58**	
	Running current (Heating)	A	**7.0/7.3**	
	Power factor (Heating)	%	**98/98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:34 Me:31 Lo:28	48
Exterior dimensions Height × Width × Depth		**mm**	**299 × 750 × 635**	**595 × 780 (+67) × 290**
Net weight		**kg**	**34**	**40**
Refrigerant equipment Compressor type & Q'ty			–	**5CS102XFD × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan ×1
Motor		W	**55 × 1**	**34 × 1**
Starting method			Direct line start	Direct line start
Air flow (Standard)		**CMM**	**Hi:14 Me:12 Lo:11**	**41**
Available static pressure		Pa	**Standard: 50, Max: 85**	–
Outside air intake			–	–
Air filter, Q'ty			–	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Filter kit (UM-FL1E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDUMVA251HEN2R

Item		Model	FDUMVA251HEN2R	
			FDUMA252R	FDCVA251HENR
Nominal cooling capacity(1)		kW	**5.6 [2.8~6.3]**	
Nominal heating capacity(1)		kW	**6.4 [3.1~7.1]**	
Power source			**1 Phase, 220-240V, 50Hz/220V, 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.66/1.66**	
	Running current (Cooling)	A	**7.3/7.6**	
	Power factor (Cooling)	%	**99/99**	
	Heating power consumption	kW	**1.82/1.82**	
	Running current (Heating)	A	**8.3/8.7**	
	Power factor (Heating)	%	**95/95**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:34 Me:31 Lo:28	48
Exterior dimensions Height × Width × Depth		**mm**	**299 × 950 × 635**	**595 × 780 (+67) × 290**
Net weight		**kg**	**40**	**40**
Refrigerant equipment Compressor type & Q'ty			–	**5CS102XFD × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.75 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan ×1
Motor		W	**90 × 1**	**34 × 1**
Starting method			Direct line start	Direct line start
Air flow (Standard)		**CMM**	**Hi:18 Me:16 Lo:14**	**41**
Available static pressure		Pa	**Standard: 50, Max: 85**	–
Outside air intake			–	–
Air filter, Q'ty			–	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Filter kit (UM-FL2E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	12˚C	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDUMA302HEN2R

Item		Model	FDUMA302HEN2R	
			FDUMA302R	FDCVA302HENR
Nominal cooling capacity(1)		kW	**7.1 [3.5~8.0]**	
Nominal heating capacity(1)		kW	**8.0 [4.0~9.0]**	
Power source			**1 Phase, 220-240V, 50Hz/220V, 60Hz**	
Operation data(3)	Cooling power consumption	kW	**2.08/2.08**	
	Running current (Cooling)	A	**9.2/9.6**	
	Power factor (Cooling)	%	**98/98**	
	Heating power consumption	kW	**2.21/2.21**	
	Running current (Heating)	A	**10.2/10.7**	
	Power factor (Heating)	%	**94/94**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:35 Me:32 Lo:29	48
Exterior dimensions Height × Width × Depth		**mm**	**299 × 950 × 635**	**750 × 880 (+88) × 340**
Net weight		**kg**	**40**	**60**
Refrigerant equipment Compressor type & Q'ty			–	**2YC45DXD × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**2.95 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.65 (FVC50K)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan ×1
Motor		W	**100 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow (Standard)		**CMM**	**Hi:20 Me:18 Lo:15**	**Cooling type:60, Heating type:48.5**
Available static pressure		Pa	**Standard: 50, Max: 85**	–
Outside air intake			–	–
Air filter, Q'ty			–	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Filter kit (UM-FL2E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDUMVA402HEN2R

Item		Model	FDUMVA402HEN2R	
			FDUMA402R	FDCVA402HENAR
Nominal cooling capacity(1)		kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)		kW	**11.2 [6.0~12.5]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**2.80/2.80**	
	Running current (Cooling)	A	**12.5/13.1**	
	Power factor (Cooling)	%	**97/97**	
	Heating power consumption	kW	**2.77/2.80**	
	Running current (Heating)	A	**12.4/13.0**	
	Power factor (Heating)	%	**97/98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:37 Me:35 Lo:32	50
Exterior dimensions Height × Width × Depth		**mm**	**350 × 1370 × 635**	**845 × 970 × 370**
Net weight		**kg**	**59**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE21 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 3	Propeller fan ×1
Motor		W	**45 × 1, 90 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow (Standard)		**CMM**	**Hi: 28 Me: 25 Lo: 22**	**Cooling type: 75, Heating type: 73**
Available static pressure		Pa	**Standard: 60, Max: 90**	–
Outside air intake			–	–
Air filter, Q'ty			–	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDUMVA402HES2R

Item		Model	FDUMVA402HES2R	
			FDUMA402R	FDCVA402HESAR
Nominal cooling capacity(1)		kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)		kW	**11.2 [6.0~12.5]**	
Power source			**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**2.80/2.80**	
	Running current (Cooling)	A	**4.2/4.4**	
	Power factor (Cooling)	%	**96/97**	
	Heating power consumption	kW	**2.77/2.80**	
	Running current (Heating)	A	**4.1/4.3**	
	Power factor (Heating)	%	**98/99**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:37 Me:35 Lo:32	50
Exterior dimensions Height × Width × Depth		**mm**	**350 × 1370 × 635**	**845 × 970 × 370**
Net weight		**kg**	**59**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE31 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 3	Propeller fan ×1
Motor		W	**45 × 1, 90 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow (Standard)		**CMM**	**Hi: 28 Me: 25 Lo: 22**	**Cooling type: 75, Heating type: 73**
Available static pressure		Pa	**Standard: 60, Max: 90**	–
Outside air intake			–	–
Air filter, Q'ty			–	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDUMVA502HEN2R

Item			Model	FDUMVA502HEN2R	
				FDUMA502R	FDCVA502HENAR
Nominal cooling capacity(1)		kW		**12.5 [6.7~14.0]**	
Nominal heating capacity(1)		kW		**14.0 [6.2~16.0]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**4.03/4.03**	
	Running current (Cooling)	A		**18.3/19.1**	
	Power factor (Cooling)	%		**96/96**	
	Heating power consumption	kW		**3.80/3.85**	
	Running current (Heating)	A		**17.0/18.1**	
	Power factor (Heating)	%		**97/97**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Hi:38 Me:36 Lo:33	52
Exterior dimensions Height × Width × Depth		**mm**		**350 × 1370 × 635**	**845 × 970 × 370**
Net weight		**kg**		**59**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 3	Propeller fan ×1
Motor		W		**50 × 1, 100 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow (Standard)		**CMM**		**Hi: 34 Me: 31 Lo: 27**	**Cooling: 75, Heating: 73**
Available static pressure		Pa		**Standard: 60, Max 85**	–
Outside air intake				–	–
Air filter, Q'ty				–	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**		**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDUMVA502HES2R

Item		Model	FDUMVA502HES2R	
			FDUMA502R	FDCVA502HESAR
Nominal cooling capacity(1)		kW	**12.5 [6.7~14.0]**	
Nominal heating capacity(1)		kW	**14.0 [6.2~16.0]**	
Power source			**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**4.03/4.03**	
	Running current (Cooling)	A	**6.1/6.4**	
	Power factor (Cooling)	%	**95/96**	
	Heating power consumption	kW	**3.80/3.85**	
	Running current (Heating)	A	**5.7/6.0**	
	Power factor (Heating)	%	**96/97**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:38 Me:36 Lo:33	52
Exterior dimensions Height × Width × Depth		**mm**	**350 × 1370 × 635**	**845 × 970 × 370**
Net weight		**kg**	**59**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE31 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 3	Propeller fan ×1
Motor		W	**50 × 1, 100 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow (Standard)		**CMM**	**Hi: 34 Me: 31 Lo: 27**	**Cooling: 75, Heating: 73**
Available static pressure		Pa	**Standard: 60, Max 85**	–
Outside air intake			–	–
Air filter, Q'ty			–	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDUMVA602HEN2R

Item			Model	FDUMVA602HEN2R	
				FDUMA602R	FDCVA602HENAR
Nominal cooling capacity(1)		kW		**14.0 [6.7~14.5]**	
Nominal heating capacity(1)		kW		**16.0 [6.3~16.5]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW		**4.95/4.95**	
	Running current (Cooling)	A		**22.3/23.3**	
	Power factor (Cooling)	%		**97/97**	
	Heating power consumption	kW		**4.75/4.91**	
	Running current (Heating)	A		**21.7/22.5**	
	Power factor (Heating)	%		**95/99**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		Hi:38 Me:36 Lo:33	53
Exterior dimensions Height × Width × Depth		**mm**		**350 × 1370 × 635**	**845 × 970 × 370**
Net weight		**kg**		**59**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 3	Propeller fan ×1
Motor		W		**50 × 1, 100 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow (Standard)		**CMM**		**Hi: 34 Me: 31 Lo: 27**	**Cooling: 75, Heating: 73**
Available static pressure		Pa		**Standard: 60, Max 85**	–
Outside air intake				–	–
Air filter, Q'ty				–	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**		**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDUMVA602HES2R

Item		Model	FDUMVA602HES2R	
			FDUMA602R	FDCVA602HESAR
Nominal cooling capacity(1)		kW	**14.0 [6.7~14.5]**	
Nominal heating capacity(1)		kW	**16.0 [6.3~16.5]**	
Power source			**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**4.95/4.95**	
	Running current (Cooling)	A	**7.4/7.7**	
	Power factor (Cooling)	%	**97/98**	
	Heating power consumption	kW	**4.75/4.91**	
	Running current (Heating)	A	**7.2/7.6**	
	Power factor (Heating)	%	**95/98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:38 Me:36 Lo:33	53
Exterior dimensions Height × Width × Depth		**mm**	**350 × 1370 × 635**	**845 × 970 × 370**
Net weight		**kg**	**59**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE31 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 3	Propeller fan ×1
Motor		W	**50 × 1, 100 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow (Standard)		**CMM**	**Hi: 34 Me: 31 Lo: 27**	**Cooling: 75, Heating: 73**
Available static pressure		Pa	**Standard: 60, Max 85**	–
Outside air intake			–	–
Air filter, Q'ty			–	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ9.52 (3/8″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(b)Twin type

Model FDUMVA402HENP2R(Indoor unit: 2 units, Outdoor unit: 7 units)

Item			Model	FDUMVA402HENP2R	
				FDUMA202R	FDCVA402HENAR
Nominal cooling capacity(1)			kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)			kW	**11.2 [6.0~12.5]**	
Power source				**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**3.12/3.12**	
	Running current (Cooling)		A	**13.6/14.3**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**3.27/3.27**	
	Running current (Heating)		A	**14.3/15.0**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Hi:34 Me:31 Lo:28	50
Exterior dimensions Height × Width × Depth			**mm**	**299 × 750 × 635**	**845 × 970 × 370**
Net weight			**kg**	**34**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 1
Motor			W	**55 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow (Standard)			**CMM**	**Hi: 14 Me: 12 Lo: 11**	**Cooling type: 75, Heating type: 73**
Available static pressure			Pa	**Standard: 50, Max 85**	–
Outside air intake				–	–
Air filter, Q'ty				–	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52(3/8″)**	
	Gas line			**Indoor branch pipe:ϕ12.7(1/2″), Outdoor main pipe:ϕ15.88(5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDUMVA402HESP2R(Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDUMVA402HESP2R	
				FDUMA202R	FDCVA402HESAR
Nominal cooling capacity(1)			kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)			kW	**11.2 [6.0~12.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**3.12/3.12**	
	Running current (Cooling)		A	**4.6/4.8**	
	Power factor (Cooling)		%	**98/99**	
	Heating power consumption		kW	**3.27/3.27**	
	Running current (Heating)		A	**4.8/5.0**	
	Power factor (Heating)		%	**98/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Hi:34 Me:31 Lo:28	50
Exterior dimensions Height × Width × Depth			**mm**	**299 × 750 × 635**	**845 × 970 × 370**
Net weight			**kg**	**34**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 1
Motor			W	**55 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow (Standard)			**CMM**	**Hi: 14 Me: 12 Lo: 11**	**Cooling type: 75, Heating type: 73**
Available static pressure			Pa	**Standard: 50, Max 85**	–
Outside air intake				–	–
Air filter, Q'ty				–	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52(3/8″)**	
	Gas line			**Indoor branch pipe:ϕ12.7(1/2″), Outdoor main pipe:ϕ15.88(5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDUMVA502HENP2R(Indoor unit: 2 units, Outdoor unit: 1 unit)

Item		Model	FDUMVA502HENP2R	
			FDUMA252R	FDCVA502HENAR
Nominal cooling capacity(1)		kW	**12.5 [6.7~14.0]**	
Nominal heating capacity(1)		kW	**14.0 [6.2~16.0]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**4.47/4.47**	
	Running current (Cooling)	A	**19.7/20.6**	
	Power factor (Cooling)	%	**99/99**	
	Heating power consumption	kW	**4.51/4.51**	
	Running current (Heating)	A	**19.8/20.7**	
	Power factor (Heating)	%	**99/99**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:34 Me:31 Lo:28	52
Exterior dimensions Height × Width × Depth		**mm**	**299 × 950 × 635**	**845 × 970 × 370**
Net weight		**kg**	**40**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE21 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1
Motor		W	**90 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow (Standard)		**CMM**	**Hi:18 Me:16 Lo:14**	**Cooling:75, Heating:73**
Available static pressure		Pa	**Standard:50, Max 85**	–
Outside air intake			–	–
Air filter, Q'ty			–	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**	**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line		**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDUMVA502HESP2R(Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDUMVA502HESP2R	
				FDUMA252R	FDCVA502HESAR
Nominal cooling capacity(1)			kW	**12.5 [6.7~14.0]**	
Nominal heating capacity(1)			kW	**14.0 [6.2~16.0]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.47/4.47**	
	Running current (Cooling)		A	**6.6/6.9**	
	Power factor (Cooling)		%	**98/98**	
	Heating power consumption		kW	**4.51/4.51**	
	Running current (Heating)		A	**6.6/6.9**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Hi:34 Me:31 Lo:28	52
Exterior dimensions Height × Width × Depth			**mm**	**299 × 950 × 635**	**845 × 970 × 370**
Net weight			**kg**	**40**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 1
Motor			W	**90 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow (Standard)			**CMM**	**Hi:18 Me:16 Lo:14**	**Cooling:75, Heating:73**
Available static pressure			Pa	**Standard:50, Max 85**	–
Outside air intake				–	–
Air filter, Q'ty				–	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDUMVA602HENP2R(Indoor unit: 2 units, Outdoor unit: 1 unit)

Item		Model	FDUMVA602HENP2R	
			FDUMA302R	FDCVA602HENAR
Nominal cooling capacity(1)		kW	**14.0 [6.7~14.5]**	
Nominal heating capacity(1)		kW	**16.0 [6.3~16.5]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**5.00/5.00**	
	Running current (Cooling)	A	**22.0/23.0**	
	Power factor (Cooling)	%	**99/99**	
	Heating power consumption	kW	**4.80/4.80**	
	Running current (Heating)	A	**21.1/22.1**	
	Power factor (Heating)	%	**99/99**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:35 Me:32 Lo:29	53
Exterior dimensions Height × Width × Depth		**mm**	**299 × 950 × 635**	**845 × 970 × 370**
Net weight		**kg**	**40**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE21 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1
Motor		W	**100 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow (Standard)		**CMM**	**Hi:20 Me:18 Lo:15**	**Cooling:75, Heating:73**
Available static pressure		Pa	**Standard:50, Max 85**	–
Outside air intake			–	–
Air filter, Q'ty			–	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**	**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line		**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDUMVA602HESP2R(Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDUMVA602HESP2R	
				FDUMA302R	FDCVA602HESAR
Nominal cooling capacity(1)			kW	**14.0 [6.7~14.5]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**5.00/5.00**	
	Running current (Cooling)		A	**7.3/7.7**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**4.80/4.80**	
	Running current (Heating)		A	**7.0/7.4**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Hi:35 Me:32 Lo:29	53
Exterior dimensions Height × Width × Depth			**mm**	**299 × 950 × 635**	**845 × 970 × 370**
Net weight			**kg**	**40**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 1
Motor			W	**100 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow (Standard)			**CMM**	**Hi:20 Me:18 Lo:15**	**Cooling:75, Heating:73**
Available static pressure			Pa	**Standard:50, Max 85**	–
Outside air intake				–	–
Air filter, Q'ty				–	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

Model FDUMVA802HESP2R(Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDUMVA802HESP2R	
				FDUMA402R	FDCVA802HESAR
Nominal cooling capacity(1)			kW	**20.0 [7.0~22.4]**	
Nominal heating capacity(1)			kW	**22.4 [7.6~25.0]**	
Power source				**3 Phase, 380−415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**6.86/6.86**	
	Running current (Cooling)		A	**9.9/10.5**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**6.72/6.72**	
	Running current (Heating)		A	**9.8/10.3**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Hi:37 Me:35 Lo:32	57
Exterior dimensions Height × Width × Depth			**mm**	**350 × 1370 × 635**	**1300 × 970 × 370**
Net weight			**kg**	**59**	**122**
Refrigerant equipment Compressor type & Q'ty				–	**GT-C5150ND79 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**5.4 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.45 (M-MA32R)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 3	Propeller fan × 2
Motor			W	**45 × 1,90 × 1**	**120 × 2**
Starting method				Direct line start	Direct line start
Air flow (Standard)			**CMM**	**Hi:28 Me:25 Lo:22**	**Cooling:150, Heating:145**
Available static pressure			Pa	**Standard:60, Max:90**	–
Outside air intake				–	–
Air filter, Q'ty				–	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	40 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line(6)			**Indoor branch pipe: ϕ15.88 (5/8″), Outdoor main pipe: ϕ25.4 (1″)**	
Connecting method				**Flare piping(Outdoor gas piping: Brazing)**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts				Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

Model FDUMVA1002HESP2R(Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDUMVA1002HESP2R	
				FDUMA502R	FDCVA1002HESAR
Nominal cooling capacity(1)			kW	**25.0 [10.6~28.0]**	
Nominal heating capacity(1)			kW	**28.0 [9.5~31.5]**	
Power source				**3 Phase, 380−415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**9.31/9.31**	
	Running current (Cooling)		A	**13.6/14.3**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**8.35/8.35**	
	Running current (Heating)		A	**12.3/12.9**	
	Power factor (Heating)		%	**98/98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Hi:38 Me:36 Lo:33	Cooling:57,Heating:58
Exterior dimensions Height × Width × Depth			**mm**	**350 × 1370 × 635**	**1505 × 970 × 370**
Net weight			**kg**	**59**	**140**
Refrigerant equipment Compressor type & Q'ty				–	**GT-C5150ND79 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**7.2 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.45 (M-MA32R)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 3	Propeller fan × 2
Motor			W	**50 × 1,100 × 1**	**120 × 2**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Hi:34 Me:31 Lo:27**	**Cooling:150, Heating:145**
Available static pressure			Pa	**Standard:60, Max:85**	–
Outside air intake				–	–
Air filter, Q'ty				–	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	40 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe: ϕ9.52 (3/8″), Outdoor main pipe: ϕ12.7 (1/2″)**	
	Gas line(6)			**Indoor branch pipe: ϕ15.88 (5/8″), Outdoor main pipe: ϕ25.4 (1″)**	
Connecting method				**Flare piping(Outdoor gas piping: Brazing)**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts				Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

(c) Triple type

Model FDUMVA602HENT2R(Indoor unit: 3 units, Outdoor unit: 1 unit)

Item		Model	FDUMVA602HENT2R	
			FDUMA202R	FDCVA602HENAR
Nominal cooling capacity(1)		kW	**14.0 [6.7~14.5]**	
Nominal heating capacity(1)		kW	**16.0 [6.3~16.5]**	
Power source			**1 Phase, 220-240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**5.09/5.09**	
	Running current (Cooling)	A	**22.4/23.4**	
	Power factor (Cooling)	%	**99/99**	
	Heating power consumption	kW	**4.89/4.89**	
	Running current (Heating)	A	**21.5/22.5**	
	Power factor (Heating)	%	**99/99**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Hi:34 Me:31 Lo:28	53
Exterior dimensions Height × Width × Depth		**mm**	**299 × 750 × 635**	**845 × 970 × 370**
Net weight		**kg**	**34**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE21 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal fan × 2	Propeller fan × 1
Motor		W	**55 × 1**	**120 × 1**
Starting method			Direct line start	Direct line start
Air flow (Standard)		**CMM**	**Hi:14 Me:12 Lo:11**	**Cooling:75, Heating:73**
Available static pressure		Pa	**Standard:50, Max:85**	–
Outside air intake			–	–
Air filter, Q'ty			–	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**	**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line		**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

Model FDUMVA602HEST2R(Indoor unit: 3 units, Outdoor unit: 1 unit)

Item			Model	FDUMVA602HEST2R	
				FDUMA202R	FDCVA602HESAR
Nominal cooling capacity(1)			kW	**14.0 [6.7~14.5]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.5]**	
Power source				**3 Phase, 380-415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**5.09/5.09**	
	Running current (Cooling)		A	**7.4/7.8**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**4.89/4.89**	
	Running current (Heating)		A	**7.1/7.5**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Hi:34 Me:31 Lo:28	53
Exterior dimensions Height × Width × Depth			**mm**	**299 × 750 × 635**	**845 × 970 × 370**
Net weight			**kg**	**34**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 1
Motor			W	**55 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow (Standard)			**CMM**	**Hi:14 Me:12 Lo:11**	**Cooling:75, Heating:73**
Available static pressure			Pa	**Standard:50, Max:85**	–
Outside air intake				–	–
Air filter, Q'ty				–	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

Model FDUMVA802HEST2R(Indoor unit: 3 units, Outdoor unit: 1 unit)

Item			Model	FDUMVA802HEST2R	
				FDUMA302R	FDCVA802HESAR
Nominal cooling capacity(1)			kW	**20.0 [7.0~22.4]**	
Nominal heating capacity(1)			kW	**22.4 [7.6~25.0]**	
Power source				**3 Phase, 380–415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**6.88/6.88**	
	Running current (Cooling)		A	**9.9/10.6**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**6.74/6.74**	
	Running current (Heating)		A	**9.8/10.3**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Hi:35 Me:32 Lo:29	57
Exterior dimensions Height × Width × Depth			**mm**	**299 × 950 × 635**	**1300 × 970 × 370**
Net weight			**kg**	**40**	**122**
Refrigerant equipment Compressor type & Q'ty				–	**GT-C5150ND79 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	**–**	**5.4 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**1.45 (M-MA32R)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal fan × 2	Propeller fan × 2
Motor			W	**100 × 1**	**120 × 2**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Hi:20 Me:18 Lo:15**	**Cooling:150, Heating:145**
Available static pressure			Pa	**Standard:50, Max:85**	–
Outside air intake				–	–
Air filter, Q'ty				–	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	40 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line(6)			**Indoor branch pipe: ϕ15.88 (5/8″), Outdoor main pipe: ϕ25.4 (1″)**	
Connecting method				**Flare piping (Outdoor gas piping: Brazing)**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts				Filter kit (UM-FL3E)	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

(6) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

(5) High static pressure duct type (FDU)

(a) Single type

Model FDUVA802HES2R

Item			Model	FDUVA802HES2R (5)	
				FDUA801R	FDCVA802HESAR
Nominal cooling capacity(1)		kW		**20.0 [7.0~22.4]**	
Nominal heating capacity(1)		kW		**22.4 [7.6~25.0]**	
Power source				**3 Phase, 380–415V 50Hz**	
Operation data(3)	Cooling power consumption	kW		**6.50**	
	Running current (Cooling)	A		**10.5**	
	Power factor (Cooling)	%		**89**	
	Heating power consumption	kW		**6.32**	
	Running current (Heating)	A		**10.6**	
	Power factor (Heating)	%		**86**	
	Inrush current (L.R.A)	A		**5**	
	Noise level	dB(A)		48	57
Exterior dimensions Height × Width × Depth		**mm**		**360 × 1570 × 830**	**1300 × 970 × 370**
Net weight		**kg**		**92**	**122**
Refrigerant equipment Compressor type & Q'ty				–	**GT-C5150ND79 × 1**
Starting method				–	Direct line start
Heat exchanger				Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity		**kg**		**–**	**5.4 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ		–	**1.45 (M-MA32R)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Multiblade centrifugal × 4	Propeller fan × 2
Motor		W		**200 × 2**	**120 × 2**
Starting method				Direct line start	Direct line start
Air flow		**CMM**		**51**	**Cooling:150, Heating:145**
Available static pressure		Pa		**Standard:100, Max:200**	–
Outside air intake				Available	–
Air filter, Q'ty				Field purchased	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W		–	40 (Crank case heater)
Operation control Operation switch				Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**		**Liquid line: ϕ9.52(3/8″) Gas line: ϕ25.4(1″)(6)**	
Connecting method				**Brazing piping (Outdoor Liquid piping: Flare)**	
Drain hose				Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Not available in 60Hz.

(6) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

Model FDUVA1002HES2R

Item		Model	FDUVA1002HES2R (5)	
			FDUA1001R	FDCVA1002HESAR
Nominal cooling capacity(1)		kW	**25.0 [10.6~28.0]**	
Nominal heating capacity(1)		kW	**28.0 [9.5~31.5]**	
Power source			**3 Phase, 380–415V 50Hz**	
Operation data(3)	Cooling power consumption	kW	**9.05**	
	Running current (Cooling)	A	**14.8**	
	Power factor (Cooling)	%	**88**	
	Heating power consumption	kW	**8.22**	
	Running current (Heating)	A	**14.0**	
	Power factor (Heating)	%	**85**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	49	Cooling:57, Heating:58
Exterior dimensions Height × Width × Depth		**mm**	**360 × 1570 × 830**	**1505 × 970 × 370**
Net weight		**kg**	**92**	**140**
Refrigerant equipment Compressor type & Q'ty			–	**GT-C5150ND79 × 1**
Starting method			–	Direct line start
Heat exchanger			Louver fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**7.2 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**1.45 (M-MA32R)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Multiblade centrifugal × 4	Propeller fan × 2
Motor		W	**230 + 270**	**120 × 2**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**68**	**Cooling:150, Heating:145**
Available static pressure		Pa	**Standard:100, Max:200**	–
Outside air intake			Available	–
Air filter, Q'ty			Field purchased	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	40 (Crank case heater)
Operation control Operation switch			Wired remote control switch (Optional : RC-E1R) Wireless kit (Optional : RCND-KIT-HER)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ12.7 (1/2″) Gas line: ϕ25.4 (1″)(6)**	
Connecting method			**Brazing piping (Outdoor liquid piping: Flare)**	
Drain hose			Connectable with VP25 (I.D. 25mm, O.D. 32mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose, Reducer kit, (Please see page 218), Accessory pipe (Please see page 220)	
Optional parts			–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Not available in 60Hz.

(6) Be sure to use the accessory pipe to connect service valve on the gas side with the field pipe.(Refer to the 220 page).

(6) Wall mounted type (FDKN)

(a) Single type

Model FDKNVA151HEN1R

Item		Model	FDKNVA151HEN1R	
			FDKNA151R	FDCVA151HENR
Nominal cooling capacity(1)		kW	**4.0 [1.8~4.7]**	
Nominal heating capacity(1)		kW	**4.5 [2.0~5.4]**	
Power source			**1 Phase, 220–240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.30/1.30**	
	Running current (Cooling)	A	**5.8/6.1**	
	Power factor (Cooling)	%	**97/97**	
	Heating power consumption	kW	**1.30/1.30**	
	Running current (Heating)	A	**5.8/6.1**	
	Power factor (Heating)	%	**97/97**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:44 Me:42 Lo:40 Mild mode Hi:42 Me:40 Lo:37	48
Exterior dimensions Height × Width × Depth		**mm**	**298 × 840 × 240**	**595 × 780 (+67) × 290**
Net weight		**kg**	**12**	**40**
Refrigerant equipment Compressor type & Q'ty			–	**5CS102XFD × 1**
Starting method			–	Direct line start
Heat exchanger			Slitted fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Tangential fan × 1	Propeller fan × 1
Motor		W	**33 × 1**	**34 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:12 Me:11 Lo:10** **Mild mode Hi:11 Me:10 Lo:9**	**41**
Outside air intake			Unavailable	–
Air filter, Q'ty			Plastic net (washable) × 2	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional : RC-E1R)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35(1/4″) Gas line: ϕ12.7(1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP16 (I.D. 16mm, O.D. 22mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDKNVA201HEN1R

Item		Model	FDKNVA201HEN1R	
			FDKNA201R	FDCVA201HENR
Nominal cooling capacity(1)		kW	**5.0 [2.2~5.6]**	
Nominal heating capacity(1)		kW	**5.4 [2.5~6.3]**	
Power source			**1 Phase, 220–240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.66/1.66**	
	Running current (Cooling)	A	**7.4/7.7**	
	Power factor (Cooling)	%	**98/98**	
	Heating power consumption	kW	**1.58/1.58**	
	Running current (Heating)	A	**7.1/7.4**	
	Power factor (Heating)	%	**97/97**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:47 Me:44 Lo:41 Mild mode Hi:44 Me:41 Lo:38	48
Exterior dimensions Height × Width × Depth		**mm**	**298 × 840 × 240**	**595 × 780 (+67) × 290**
Net weight		**kg**	**12**	**40**
Refrigerant equipment Compressor type & Q'ty			–	**5CS102XFD × 1**
Starting method			–	Direct line start
Heat exchanger			Slitted fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.55 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Tangential fan × 1	Propeller fan × 1
Motor		W	**33 × 1**	**34 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:13 Me:12 Lo:11** **Mild mode Hi:12 Me:11 Lo:9**	**41**
Outside air intake			Unavailable	–
Air filter, Q'ty			Plastic net (washable) × 2	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional : RC-E1R)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP16 (I.D. 16mm, O.D. 22mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

Model FDKNVA251HEN1R

Item		Model	FDKNVA251HEN1R	
			FDKNA251R	FDCVA251HENR
Nominal cooling capacity(1)		kW	**5.6 [2.8~6.0]**	
Nominal heating capacity(1)		kW	**6.3 [3.1~7.1]**	
Power source			**1 Phase, 220–240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.99/1.99**	
	Running current (Cooling)	A	**8.9/9.3**	
	Power factor (Cooling)	%	**97/97**	
	Heating power consumption	kW	**1.85/1.85**	
	Running current (Heating)	A	**8.2/8.6**	
	Power factor (Heating)	%	**98/98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Poweful mode Hi:48 Me:45 Lo:42 Mild mode Hi:45 Me:42 Lo:39	48
Exterior dimensions Height × Width × Depth		**mm**	**298 × 840 × 240**	**595 × 780 (+67) × 290**
Net weight		**kg**	**12**	**40**
Refrigerant equipment Compressor type & Q'ty			–	**5CS102XFD × 1**
Starting method			–	Direct line start
Heat exchanger			Slitted fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	**–**	**1.75 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.48 (RB68A)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Tangential fan × 1	Propeller fan × 1
Motor		W	**33 × 1**	**34 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:14 Me:13 Lo:11** **Mild mode Hi:13 Me:11 Lo:10**	**41**
Outside air intake			Unavailable	–
Air filter, Q'ty			Plastic net (washable) × 2	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional : RC-E1R)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size		**mm (in)**	**Liquid line: ϕ6.35 (1/4″) Gas line: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP16 (I.D. 16mm, O.D. 22mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(b) Twin type

Model FDKNVA302HENP1R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item		Model	FDKNVA302HENP1R	
			FDKNA151R	FDCVA302HENR
Nominal cooling capacity(1)		kW	**7.1 [3.5~8.0]**	
Nominal heating capacity(1)		kW	**8.0 [4.0~9.0]**	
Power source			**1 Phase, 220–240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**1.67/1.67**	
	Running current (Cooling)	A	**7.3/7.7**	
	Power factor (Cooling)	%	**99/99**	
	Heating power consumption	kW	**1.84/1.84**	
	Running current (Heating)	A	**8.0/8.5**	
	Power factor (Heating)	%	**99/98**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:44 Me:42 Lo:40 Mild mode Hi:42 Me:40 Lo:37	48
Exterior dimensions Height × Width × Depth		**mm**	**298 × 840 × 240**	**750 × 880(+88) × 340**
Net weight		**kg**	**12**	**60**
Refrigerant equipment Compressor type & Q'ty			–	**2YC45DXD × 1**
Starting method			–	Direct line start
Heat exchanger			Slitted fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	–	**2.95 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.65 (FVC50K)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Tangential fan × 1	Propeller fan × 1
Motor		W	**33 × 1**	**120 × 1**
Starting method			Direct line start	
Air flow		**CMM**	**Powerful mode Hi:12 Me:11 Lo:10** **Mild mode Hi:11 Me:10 Lo:9**	**Cooling:60, Heating:48.5**
Outside air intake			Unavailable	–
Air filter, Q'ty			Plastic net (washable) × 2	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional : RC-E1R)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**	**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line		**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP16 (I.D. 16mm, O.D. 22mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDKNVA402HENP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDKNVA402HENP2R	
				FDKNA201R	FDCVA402HENAR
Nominal cooling capacity(1)			kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)			kW	**11.2 [5.6~12.5]**	
Power source				**1 Phase, 220–240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**2.90/2.90**	
	Running current (Cooling)		A	**12.8/13.4**	
	Power factor (Cooling)		%	**99/98**	
	Heating power consumption		kW	**3.24/3.24**	
	Running current (Heating)		A	**14.2/14.9**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:47 Me:44 Lo:41 Mild mode Hi:44 Me:41 Lo:38	50
Exterior dimensions Height × Width × Depth			**mm**	**298 × 840 × 240**	**845 × 970 × 370**
Net weight			**kg**	**12**	**74**
Refrigerant equipment Compressor type & Q'ty				**–**	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Slitted fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Tangential fan × 1	Propeller fan × 1
Motor			W	**33 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:13 Me:12 Lo:11** **Mild mode Hi:12 Me:11 Lo:9**	**Cooling:75, Heating:73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional : RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP16 (I.D. 16mm, O.D. 22mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDKNVA402HESP2R(Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDKNVA402HESP2R	
				FDKNA201R	FDCVA402HESAR
Nominal cooling capacity(1)			kW	**10.0 [6.1~11.2]**	
Nominal heating capacity(1)			kW	**11.2 [5.6~12.5]**	
Power source				**3 Phase, 380–415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**2.90/2.90**	
	Running current (Cooling)		A	**4.3/4.5**	
	Power factor (Cooling)		%	**97/98**	
	Heating power consumption		kW	**3.24/3.24**	
	Running current (Heating)		A	**4.7/5.0**	
	Power factor (Heating)		%	**99/98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:47 Me:44 Lo:41 Mild mode Hi:44 Me:41 Lo:38	50
Exterior dimensions Height × Width × Depth			**mm**	**298 × 840 × 240**	**845 × 970 × 370**
Net weight			**kg**	**12**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Slitted fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Tangential fan × 1	Propeller fan × 1
Motor			W	**33 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:13 Me:12 Lo:11** **Mild mode Hi:12 Me:11 Lo:9**	**Cooling:75, Heating:73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional : RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP16 (I.D. 16mm, O.D. 22mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDKNVA502HENP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDKNVA502HENP2R	
				FDKNA251R	FDCVA502HENAR
Nominal cooling capacity(1)			kW	**12.5 [6.5~14.0]**	
Nominal heating capacity(1)			kW	**14.0 [6.2~16.0]**	
Power source				**1 Phase, 220–240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.14/4.14**	
	Running current (Cooling)		A	**18.1/19.0**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**4.39/4.39**	
	Running current (Heating)		A	**19.2/20.1**	
	Power factor (Heating)		%	**99/99**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:48 Me:45 Lo:42 Mild mode Hi:45 Me:42 Lo:39	52
Exterior dimensions Height × Width × Depth			**mm**	**298 × 840 × 240**	**845 × 970 × 370**
Net weight			**kg**	**12**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE21 × 1**
Starting method				–	Direct line start
Heat exchanger				Slitted fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Tangential fan × 1	Propeller fan × 1
Motor			W	**33 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:14 Me:13 Lo:11** **Mild mode Hi:13 Me:11 Lo:10**	**Cooling:75, Heating:73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional : RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP16 (I.D. 16mm, O.D. 22mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDKNVA502HESP2R (Indoor unit: 2 units, Outdoor unit: 1 unit)

Item			Model	FDKNVA502HESP2R	
				FDKNA251R	FDCVA502HESAR
Nominal cooling capacity(1)			kW	**12.5 [6.5~14.0]**	
Nominal heating capacity(1)			kW	**14.0 [6.2~16.0]**	
Power source				**3 Phase, 380–415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.14/4.14**	
	Running current (Cooling)		A	**6.1/6.4**	
	Power factor (Cooling)		%	**98/98**	
	Heating power consumption		kW	**4.39/4.39**	
	Running current (Heating)		A	**6.4/6.8**	
	Power factor (Heating)		%	**99/98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:48 Me:45 Lo:42 Mild mode Hi:45 Me:42 Lo:39	52
Exterior dimensions Height × Width × Depth			**mm**	**298 × 840 × 240**	**845 × 970 × 370**
Net weight			**kg**	**12**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Slitted fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Tangential fan × 1	Propeller fan × 1
Motor			W	**33 × 1**	**120 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:14 Me:13 Lo:11** **Mild mode Hi:13 Me:11 Lo:10**	**Cooling:75, Heating:73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional : RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe, Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP16 (I.D. 16mm, O.D. 22mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where two indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

(c) Triple type

Model FDKNVA602HENT2R (Indoor unit: 3 units, Outdoor unit: 1 unit)

Item		Model	FDKNVA602HENT2R	
			FDKNA201R	FDCVA602HENAR
Nominal cooling capacity(1)		kW	**14.0 [6.5~14.5]**	
Nominal heating capacity(1)		kW	**16.0 [6.3~16.5]**	
Power source			**1 Phase, 220–240V 50Hz/220V 60Hz**	
Operation data(3)	Cooling power consumption	kW	**4.82/4.82**	
	Running current (Cooling)	A	**21.1/22.1**	
	Power factor (Cooling)	%	**99/99**	
	Heating power consumption	kW	**4.79/4.79**	
	Running current (Heating)	A	**21.0/22.0**	
	Power factor (Heating)	%	**99/99**	
	Inrush current (L.R.A)	A	**5**	
	Noise level	dB(A)	Powerful mode Hi:47 Me:44 Lo:41 Mild mode Hi:44 Me:41 Lo:38	53
Exterior dimensions Height × Width × Depth		**mm**	**298 × 840 × 240**	**845 × 970 × 370**
Net weight		**kg**	**12**	**74**
Refrigerant equipment Compressor type & Q'ty			–	**RM-B5125MDE21 × 1**
Starting method			–	Direct line start
Heat exchanger			Slitted fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control			–	Electronic expansion valve
Refrigerant			**R410A**	
Quantity		**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil		ℓ	–	**0.7 (M-MA68)**
Defrost control			Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty			Tangential fan × 1	Propeller fan × 1
Motor		W	**33 × 1**	**12.0 × 1**
Starting method			Direct line start	Direct line start
Air flow		**CMM**	**Powerful mode Hi:13 Me:12 Lo:11** **Mild mode Hi:12 Me:11 Lo:9**	**Cooling:75, Heating:73**
Outside air intake			Unavailable	–
Air filter, Q'ty			Plastic net (washable) × 2	–
Shock & vibration absorber			Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater		W	–	20 (Crank case heater)
Operation control Operation switch			Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional : RC-E1R)	– (Indoor unit side)
Room temperature control			Thermostat by electronics	–
Safety equipment			Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**	**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line		**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method			**Flare piping**	
Drain hose			Connectable with VP16 (I.D. 16mm, O.D. 22mm)	–
Insulation for piping			Necessary (both Liquid & Gas lines)	
Accessories			Mounting kit. Drain hose	
Optional parts			–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 230V 50Hz or 220V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

Model FDKNVA602HES T2R (Indoor unit: 3 units, Outdoor unit: 1 unit)

Item			Model	FDKNVA602HEST2R	
				FDKNA201R	FDCVA602HESAR
Nominal cooling capacity(1)			kW	**14.0 [6.5~14.5]**	
Nominal heating capacity(1)			kW	**16.0 [6.3~16.5]**	
Power source				**3 Phase, 380–415V 50Hz/380V 60Hz**	
Operation data(3)	Cooling power consumption		kW	**4.82/4.82**	
	Running current (Cooling)		A	**7.0/7.4**	
	Power factor (Cooling)		%	**99/99**	
	Heating power consumption		kW	**4.79/4.79**	
	Running current (Heating)		A	**7.0/7.4**	
	Power factor (Heating)		%	**99/98**	
	Inrush current (L.R.A)		A	**5**	
	Noise level		dB(A)	Powerful mode Hi:47 Me:44 Lo:41 Mild mode Hi:44 Me:41 Lo:38	53
Exterior dimensions Height × Width × Depth			**mm**	**298 × 840 × 240**	**845 × 970 × 370**
Net weight			**kg**	**12**	**74**
Refrigerant equipment Compressor type & Q'ty				–	**RM-B5125MDE31 × 1**
Starting method				–	Direct line start
Heat exchanger				Slitted fin & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control				–	Electronic expansion valve
Refrigerant				**R410A**	
Quantity			**kg**	–	**3.8 [Pre-charged up to the piping length of 30m]**
Refrigerant oil			ℓ	–	**0.7 (M-MA68)**
Defrost control				Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty				Tangential fan × 1	Propeller fan × 1
Motor			W	**33 × 1**	**12.0 × 1**
Starting method				Direct line start	Direct line start
Air flow			**CMM**	**Powerful mode Hi:13 Me:12 Lo:11** **Mild mode Hi:12 Me:11 Lo:9**	**Cooling:75, Heating:73**
Outside air intake				Unavailable	–
Air filter, Q'ty				Plastic net (washable) × 2	–
Shock & vibration absorber				Rubber sleeve (for fan motor)	Rubber mount (for compressor)
Electric heater			W	–	20 (Crank case heater)
Operation control Operation switch				Wireless remote control switch (Optional : RCN-E1R) Wired remote control switch (Optional : RC-E1R)	– (Indoor unit side)
Room temperature control				Thermostat by electronics	–
Safety equipment				Internal thermostat for fan motor. Frost protection thermostat.	Internal thermostat for fan motor. Anomalous discharge temperature protection.
Installation data Refrigerant piping size	**Liquid line**		**mm (in)**	**Indoor branch pipe, Outdoor main pipe: ϕ9.52 (3/8″)**	
	Gas line			**Indoor branch pipe: ϕ12.7 (1/2″), Outdoor main pipe: ϕ15.88 (5/8″)**	
Connecting method				**Flare piping**	
Drain hose				Connectable with VP16 (I.D. 16mm, O.D. 22mm)	–
Insulation for piping				Necessary (both Liquid & Gas lines)	
Accessories				Mounting kit. Drain hose	
Optional parts				–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27˚C	19˚C	35˚C	24˚C	ISO-T1
Heating	20˚C	–	7˚C	6˚C	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) The operation data indicate when the air-conditioner is operated at 400V 50Hz or 380V 60Hz.

(4) Values in [~] show the minimum to maximum range.

(5) Indoor unit specifications show the specifications for one unit. Capacity and running characteristics values are shown for the case where three indoor units are combined and run together.

(6) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

1.2.2 Range of usage & limitations

Item \ Models		151, 201, 251	302~602	802, 1002
Indoor return air temperature (Upper, lower limits)		Refer to the selection chart (see page 126)	Please see the next page.	
Outdoor air temperature (Upper, lower limits)				
Operating temperature		**When used under -5˚C, install a snow hood (option). (302~1002 only)**		
Indoor unit atmosphere (behind ceiling) temperature and humidity		Dew point temperature: 28˚C or less, relative humidity: 80% or less		
Refrigerant line (one way) length		**Max. 40m**	**Max. 50m**	**Max. 70m***
Vertical height difference between outdoor unit and indoor unit		**Max. 30m (Outdoor unit is higher) Max. 15m (Outdoor unit is lower)**		
Difference in after branch piping lengths between indoor units		–	**Max. 20m**	**Max. 30m**
Difference in height between indoor units		–	**Max. 0.5m**	
Installation site		**The outline drawing contains restrictions concerning the installation space. Install the indoor unit 2.5m or above higher than the floor surface.**		
Power source voltage		Rating ± 10%		
Voltage at starting		Min. 85% of rating		
Compressor ON-OFF Frequency	**Cycle Time**	7 minutes or more (from OFF to OFF) or (from ON to ON)		
	Stop Time	3 minutes or more		

Note (1) Do not install the unit at the following places.
- Places exposed to oil splashes or steam (e.g. kitchens and machine plants).
- Places where inflammable gas may leak.
- Places containing a great amount of sulfide gases (e.g. hot spring area).
- Places directly exposed to sea breeze (e.g. coastal area).
- Places containing acid or alkaline air.
- Places adjacent to equipment generating electromagnetic waves or high-frequency waves.
- Places sucking the exhaust gas from heat exchanger.
- Do not install the unit on an object moistened with water.
- Places where carbon fiber and metal particles, powder, etc. are floating.
- Places where chimney smoke is hanging.
- Places at an elevation of 1000m and above.
- Places splashed with water (laundry room, etc.).
- The indoor unit is not protected against water penetration.
- Do not install indoor units of twin, triple and double-twin specifications separately in a room with partition.

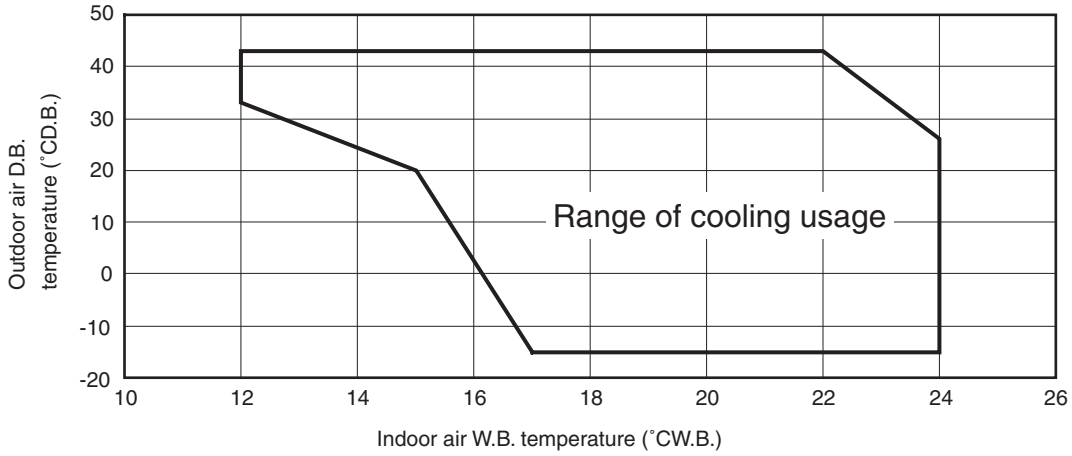
(2) If ambient temperature and humidity exceed the above values, please add polyurethane foam insulation to the outer plate (t10 and above).

(3) Please set the lower limit of one-way piping length to 5m and above.

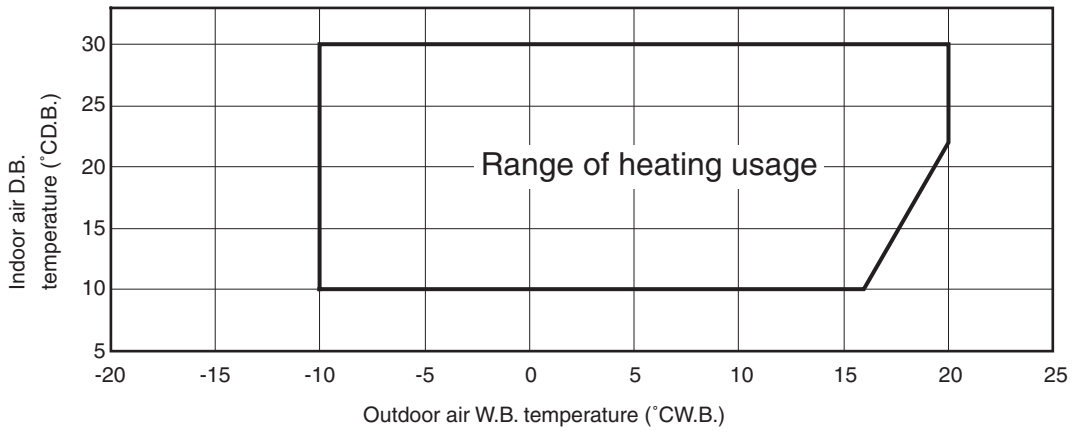
(4) When ϕ22.22 gas pipe is used for piping lengths with the ∗ mark, let the maximum one-way length be 30m.

Models 302~1002 only

■ **Cooling**

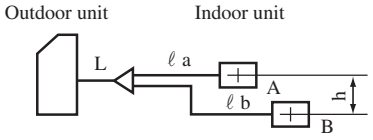


■ **Heating**

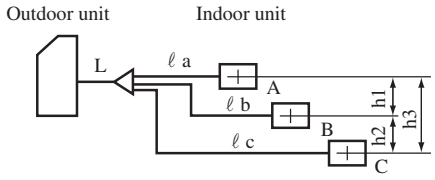


Height and length restrictions for refrigerant piping

Twin type



Triple type



Models 302~602

One-way pipe length (m) $L + \ell a + \ell b \leqq 50$

Branch pipe length (m) $|\ell a - \ell b| \leqq 10,\ \ell a \leqq 20,\ \ell b \leqq 20$

Difference in height between indoor units (m) h=0.5 or less

Models 802, 1002

One-way pipe length (m) $L + \ell a \leqq 70,\ L + \ell b \leqq 70$

Branch pipe length (m) $|\ell a - \ell b| \leqq 10,\ \ell a \leqq 30,\ \ell b \leqq 30$

Difference in height between indoor units (m) h=0.5 or less

Model 602

One-way pipe length (m) $L + \ell a + \ell b + \ell c \leqq 50$

Branch pipe length (m) $|\ell a - \ell b| \leqq 10,\ |\ell a - \ell c| \leqq 10,\ |\ell b - \ell c| \leqq 10$
$\ell a \leqq 20,\ \ell b \leqq 20,\ \ell c \leqq 20$

Difference in height between indoor units (m) h1=0.5 or less, h2=0.5 or less, h3=0.5 or less

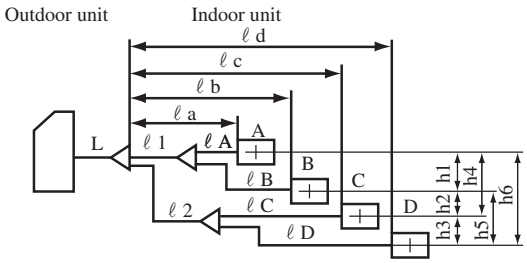
Model 802

One-way pipe length (m) $L + \ell a \leqq 70,\ L + \ell b \leqq 70,\ L + \ell c \leqq 70$

Branch pipe length (m) $|\ell a - \ell b| \leqq 10,\ |\ell a - \ell c| \leqq 10,\ |\ell b - \ell c| \leqq 10$
$\ell a \leqq 30,\ \ell b \leqq 30,\ \ell c \leqq 30$

Difference in height between indoor units (m) h1=0.5 or less, h2=0.5 or less, h3=0.5 or less

Double-twin type



Models 802, 1002

One-way pipe length (m)	$L + \ell a \leqq 70,\ L + \ell b \leqq 70,\ L + \ell c \leqq 70,\ L + \ell d \leqq 70$
Branch pipe length (m)	$\lvert \ell a - \ell b \rvert \leqq 10,\ \lvert \ell a - \ell c \rvert \leqq 10,\ \lvert \ell b - \ell c \rvert \leqq 10$
	$\lvert \ell a - \ell d \rvert \leqq 10,\ \lvert \ell b - \ell d \rvert \leqq 10,\ \lvert \ell c - \ell d \rvert \leqq 10$
	$\ell a \leqq 30,\ \ell b \leqq 30,\ \ell c \leqq 30,\ \ell d \leqq 30$
	$\ell A + \ell B \leqq 15,\ \ell C + \ell D \leqq 15$
Difference in height between indoor units (m)	h1=0.5 or less, h2=0.5 or less
	h3=0.5 or less, h4=0.5 or less
	h5=0.5 or less, h6=0.5 or less

In the illustration the L is main piping and ℓ a, ℓ b, ℓ c, and ℓ d are branch piping.

Request

(1) When the capacity of the indoor unit to be connected is 151, 201 and 251 or less, be sure to use a pipe diameter of ø9.52 for the size of the liquid piping of branch piping (between branch and indoor units). (for double-twin only) For connections to indoor units (liquid piping side dia. ø6.35) use the different diameter adapter coupling that is included in the branch piping kit.

(2) For the branch be sure to select the specified branch pipe set (sold separately) and then to follow the directions of the instruction manual included in the branch pipe set when installing the piping. Be sure to install the branch piping so that the branch is level.

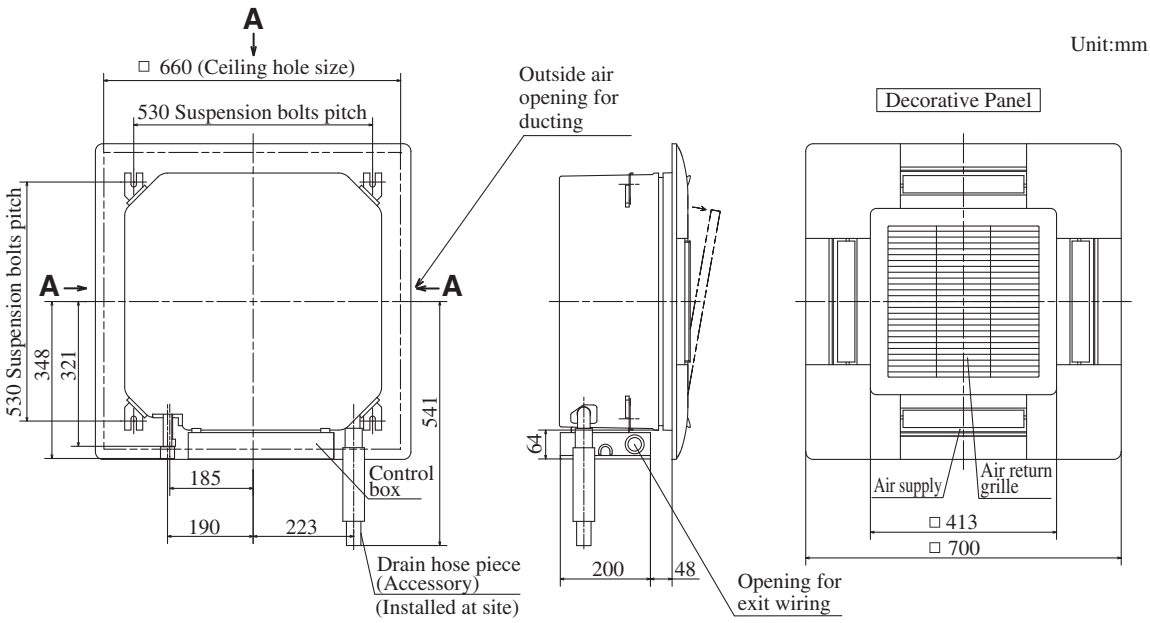
1.2.3 Exterior dimensions

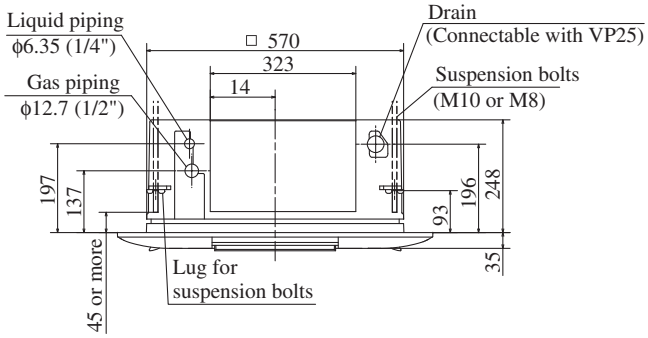
(1) Indoor unit

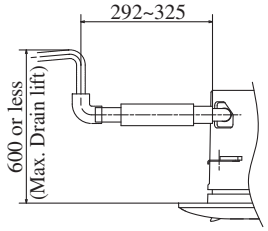
(a) Ceiling recessed compact type (FDTC)

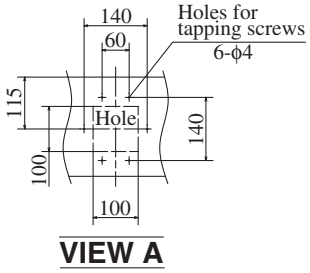
Models FDTCA151R, 201R

Unit:mm

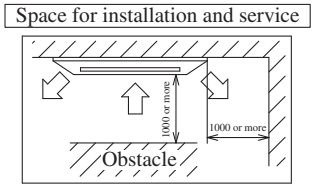








VIEW A

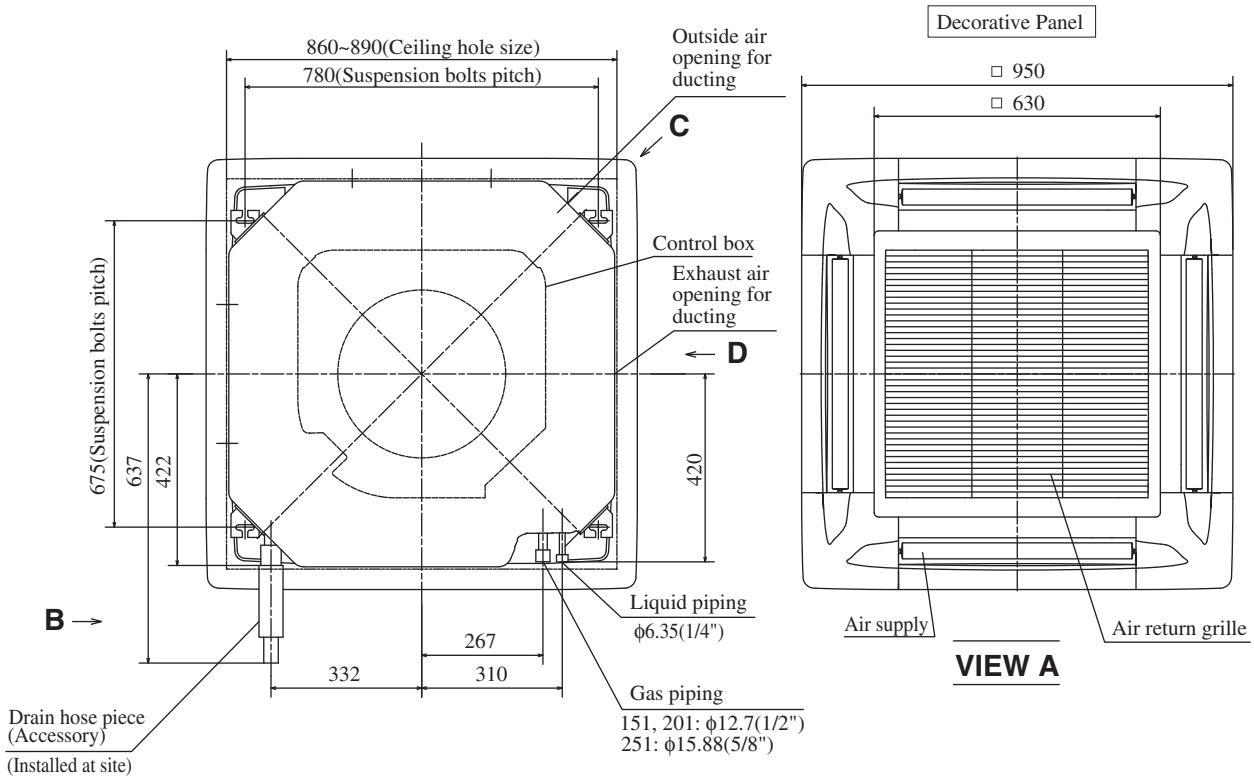


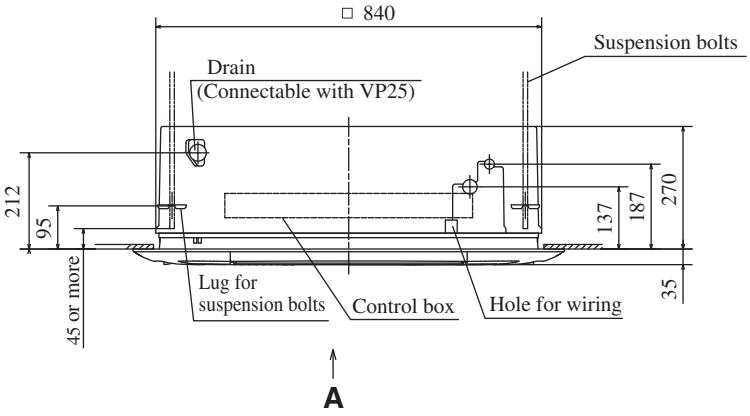
If you are mounting units close together, leave a space of 4000 or greater between units.

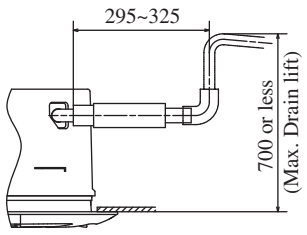
(b) Ceiling recessed type (FDT)

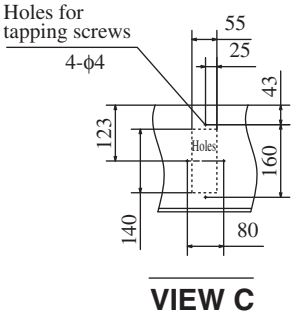
Models FDTA151R, 201R, 251R

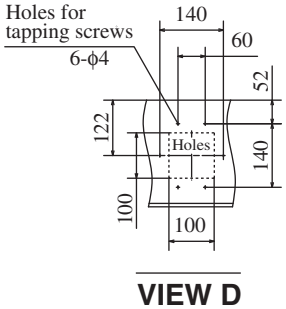
Unit : mm

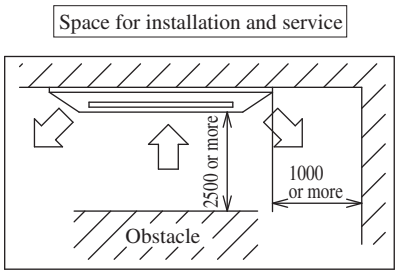








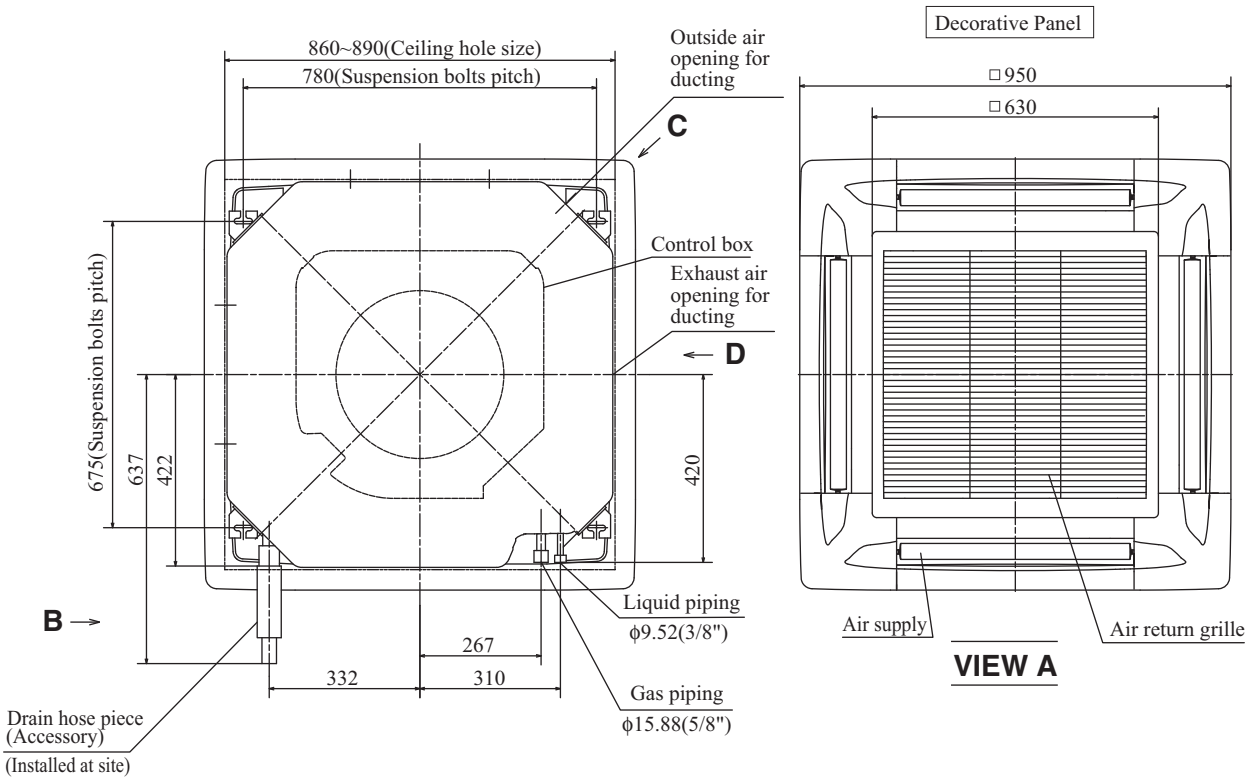


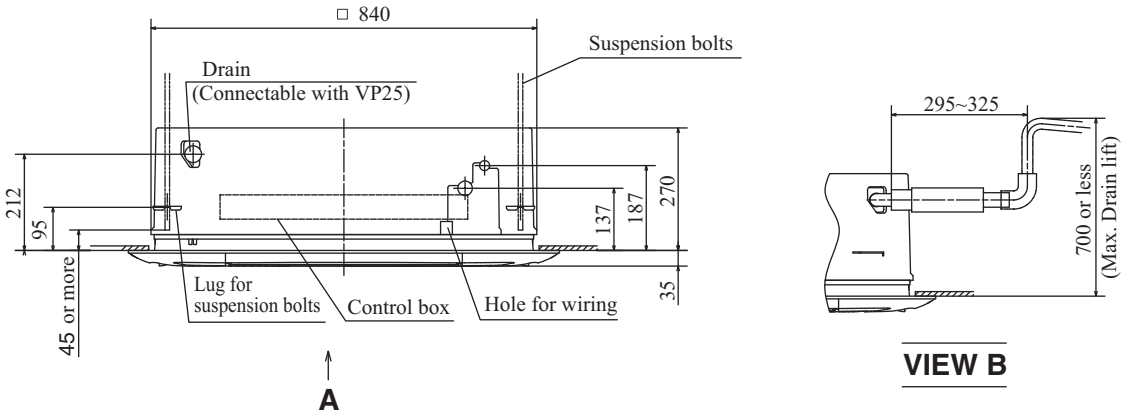


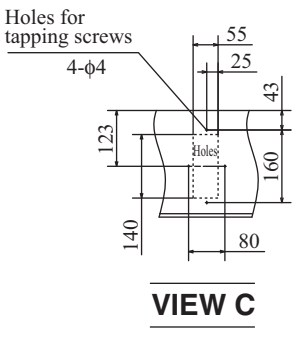
If you are mounting units close together, leave a space of 4000 or greater between units.

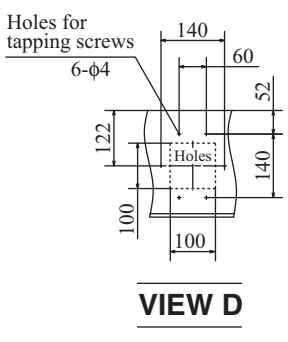
Model FDTA301R

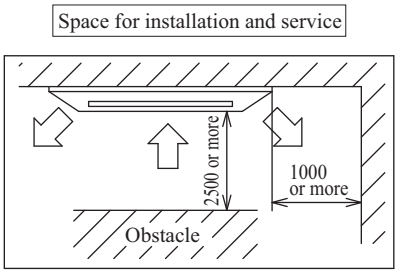
Unit : mm







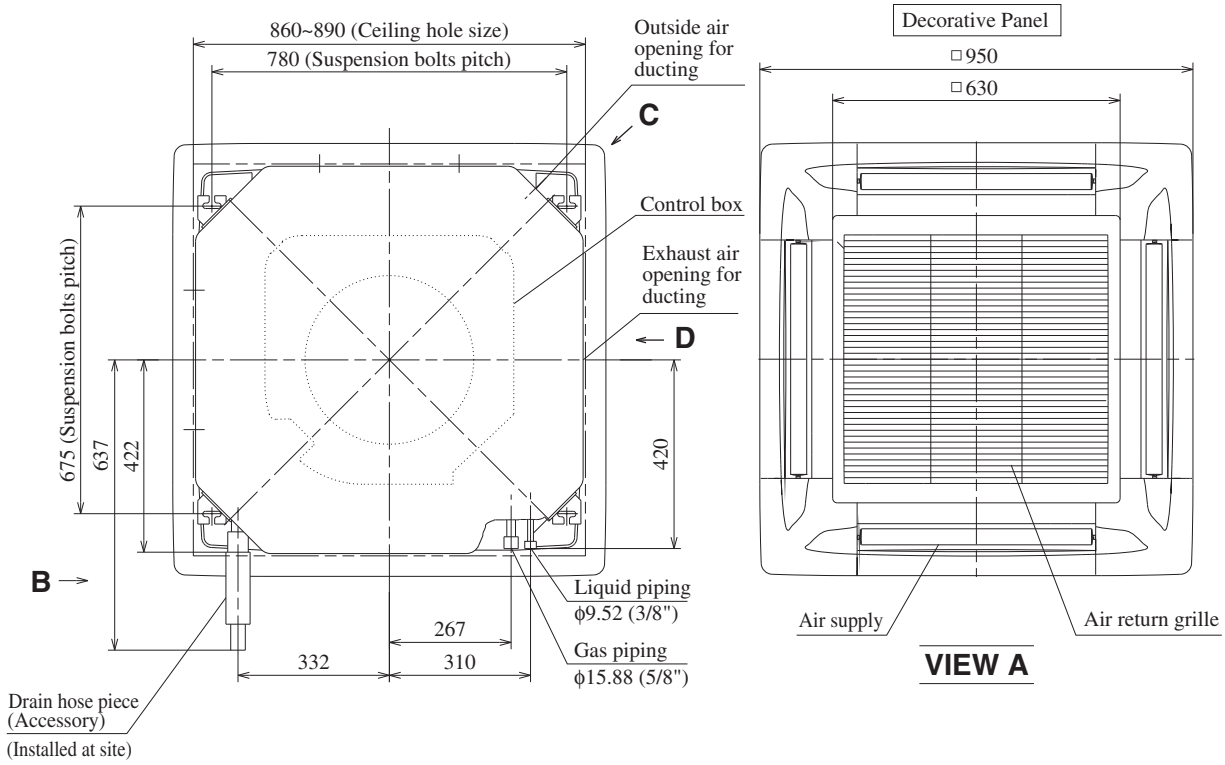


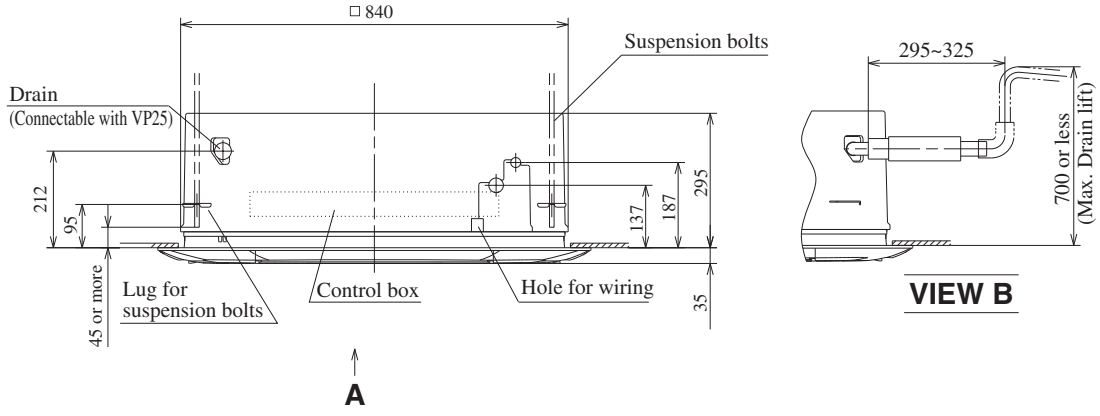


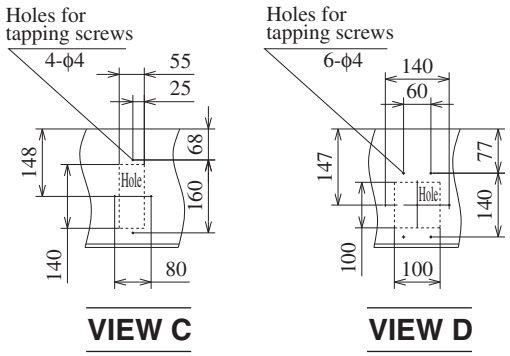
If you are mounting units close together, leave a space of 4000 or greater between units.

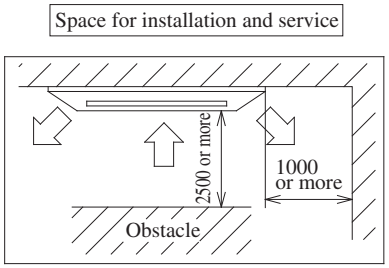
Model FDTA401R

Unit : mm





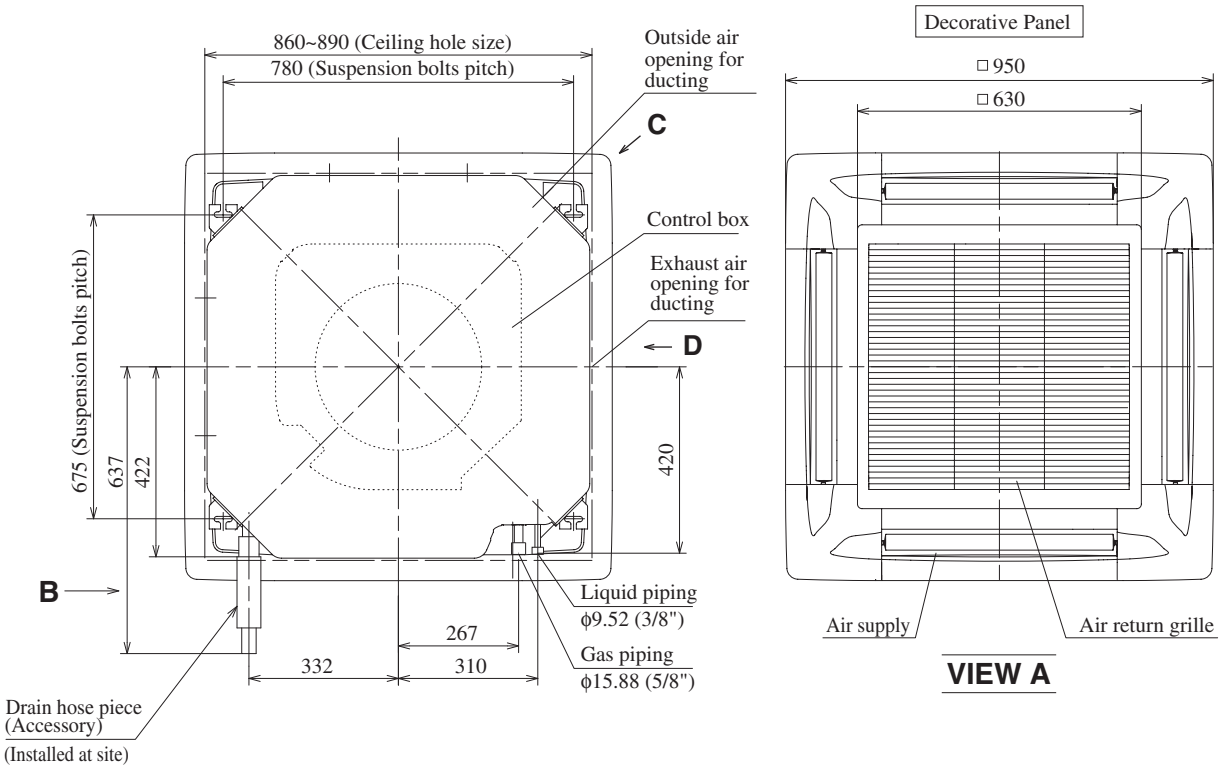


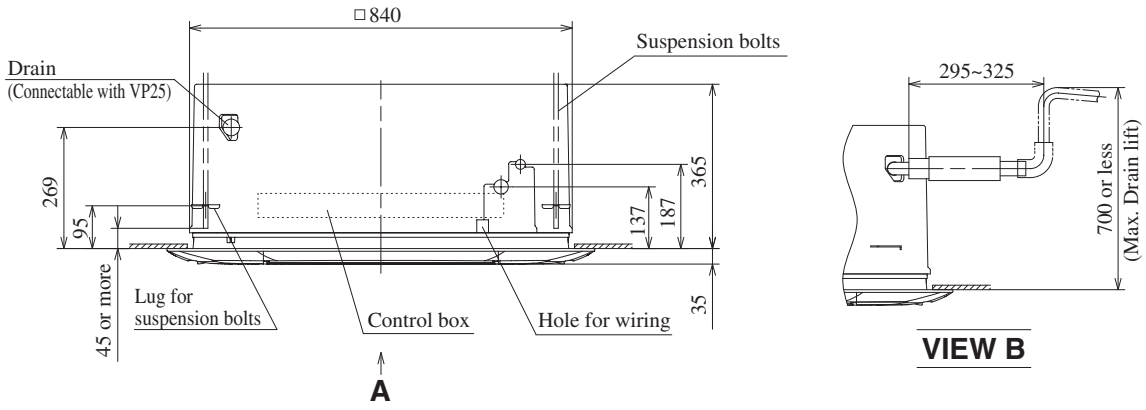


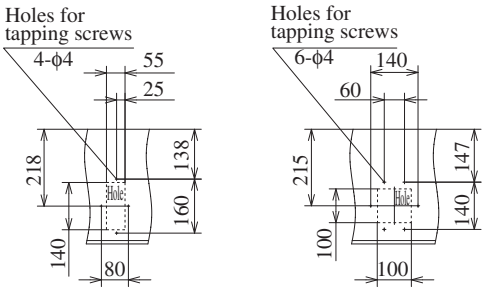
If you are mounting units close together, leave a space of 5000 or greater between units.

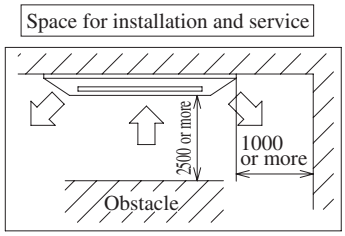
Models FDTA501R, 601R

Unit : mm







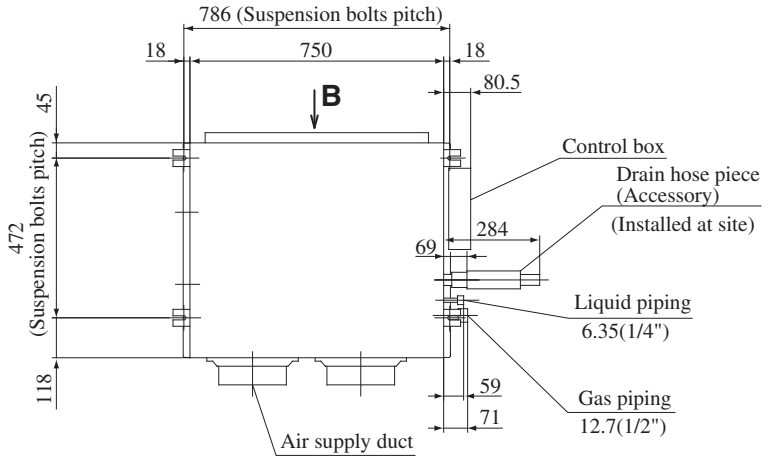


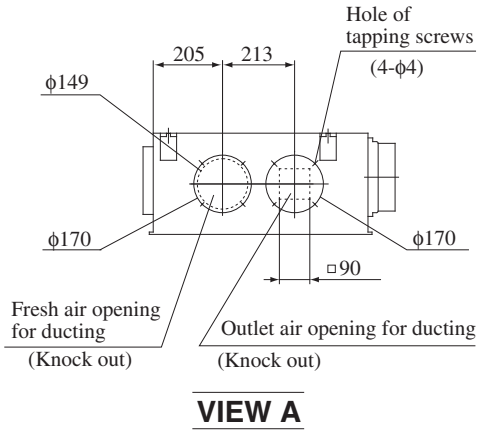
If you are mounting units close together, leave a space of 5000 or greater between units.

(c) Satellite ducted type (FDUM)

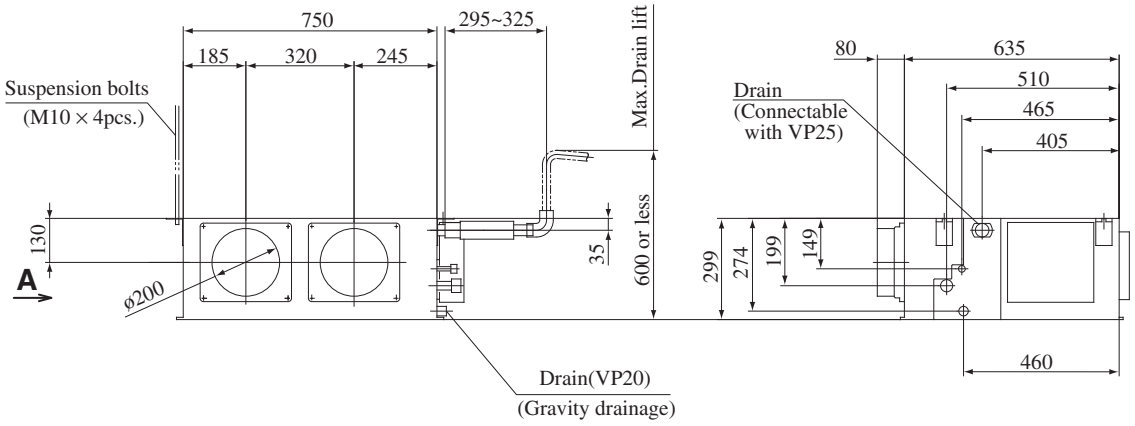
Model FDUMA202R

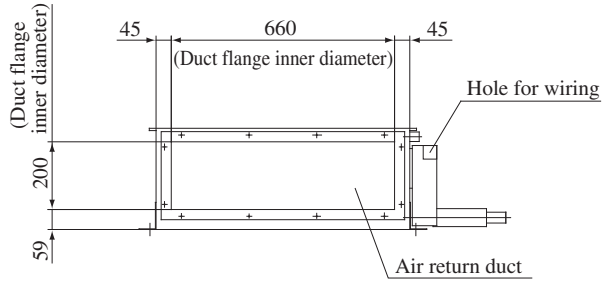
Unit : mm





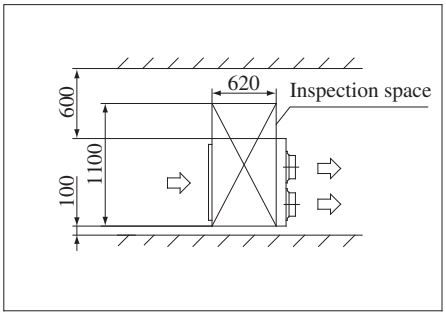
VIEW A





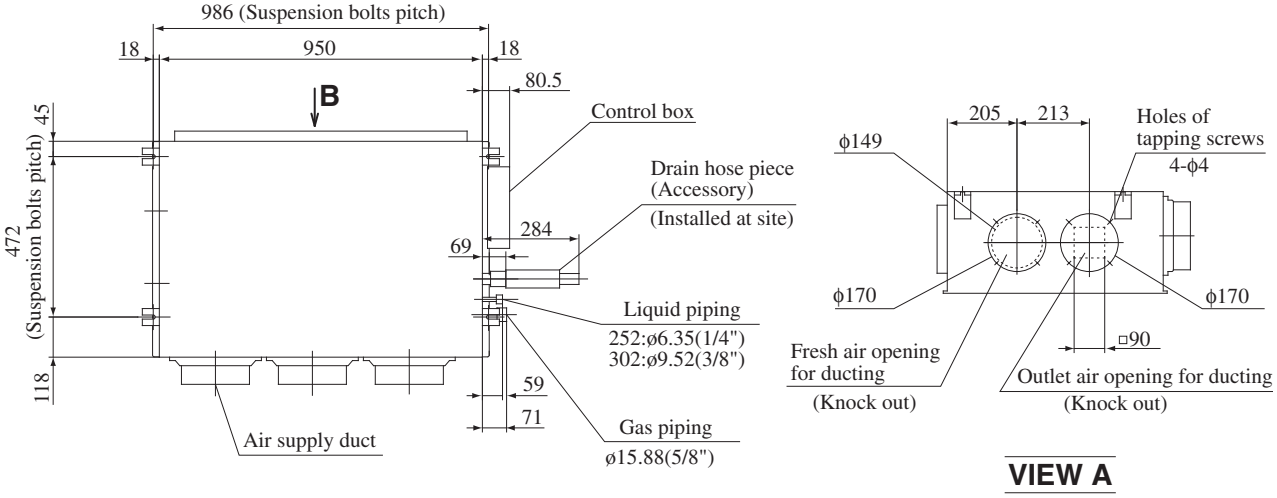
VIEW B

Space for installation and service

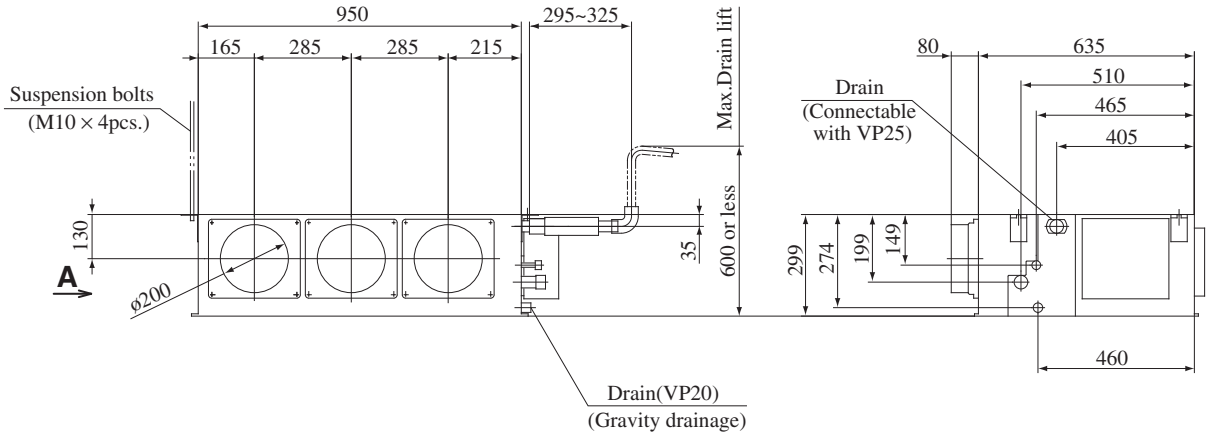


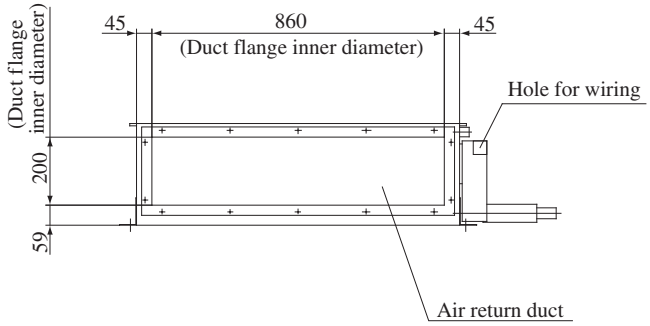
Models FDUMA252R, 302R

Unit : mm



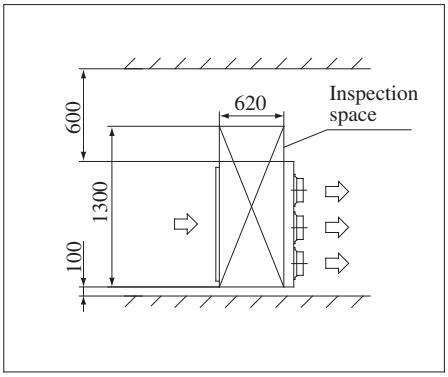
VIEW A





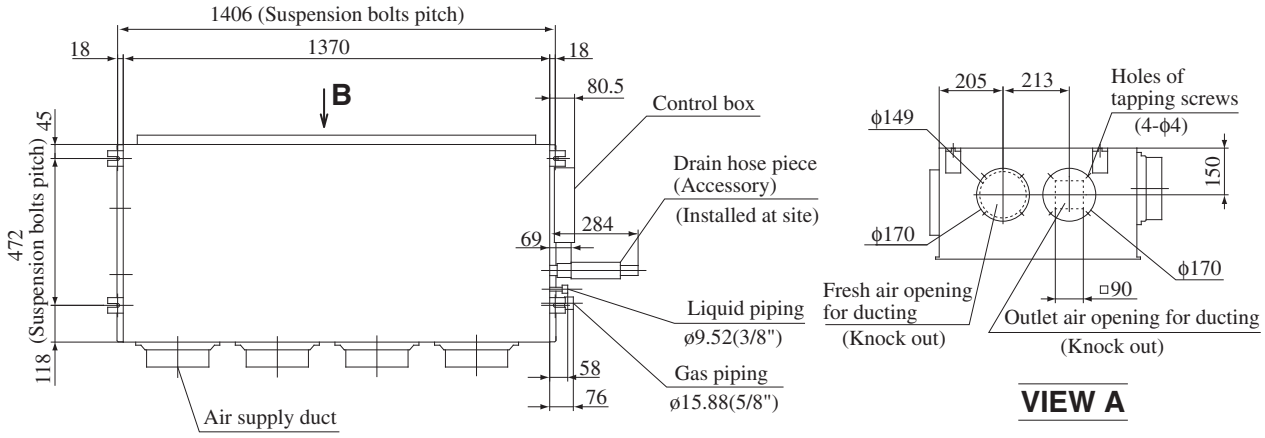
VIEW B

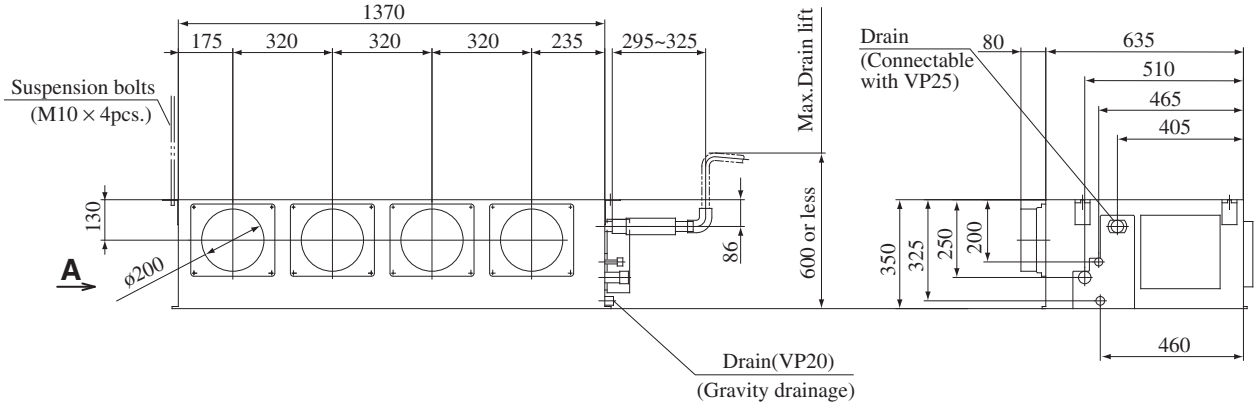
Space for installation and service

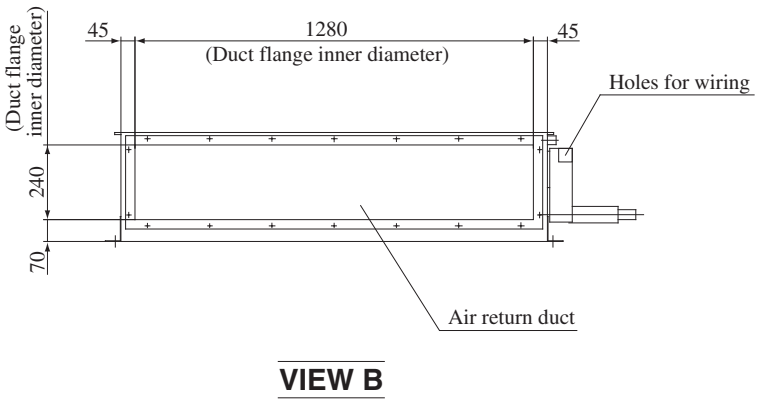


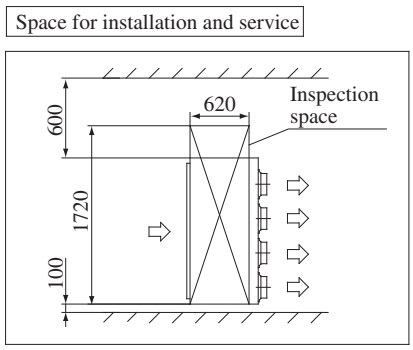
Models FDUMA402R, 502R, 602R

Unit : mm



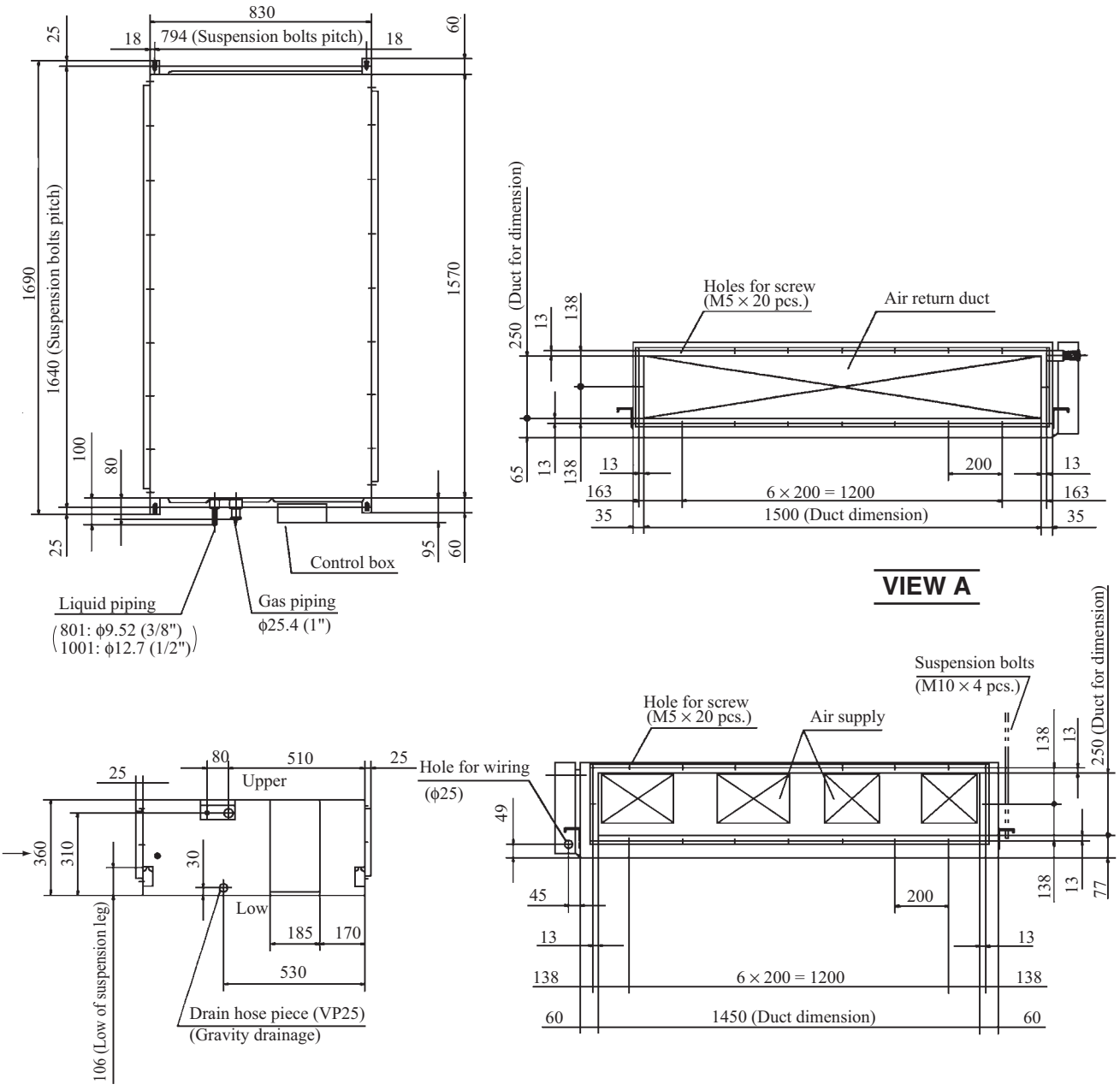




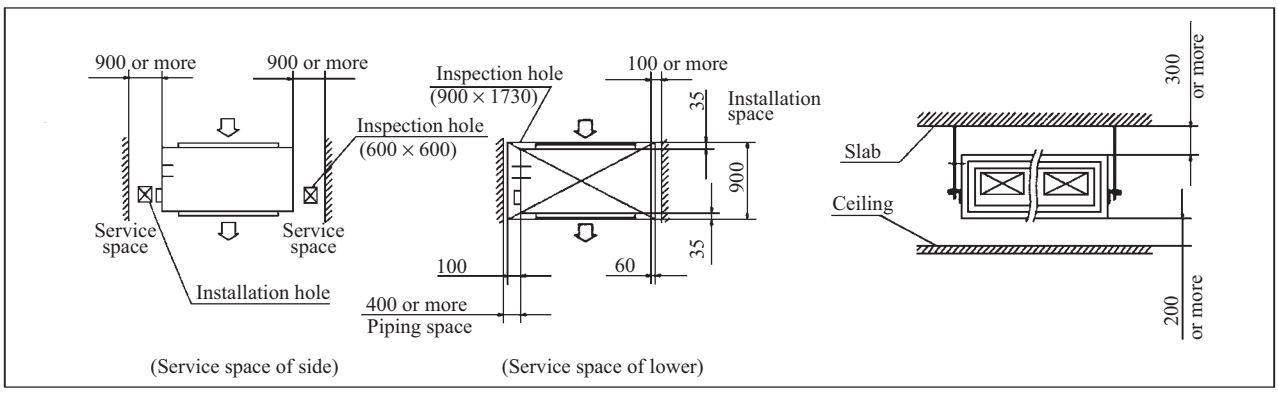


(d) High static pressured duct type (FDU)

Models FDUA801R, 1001R



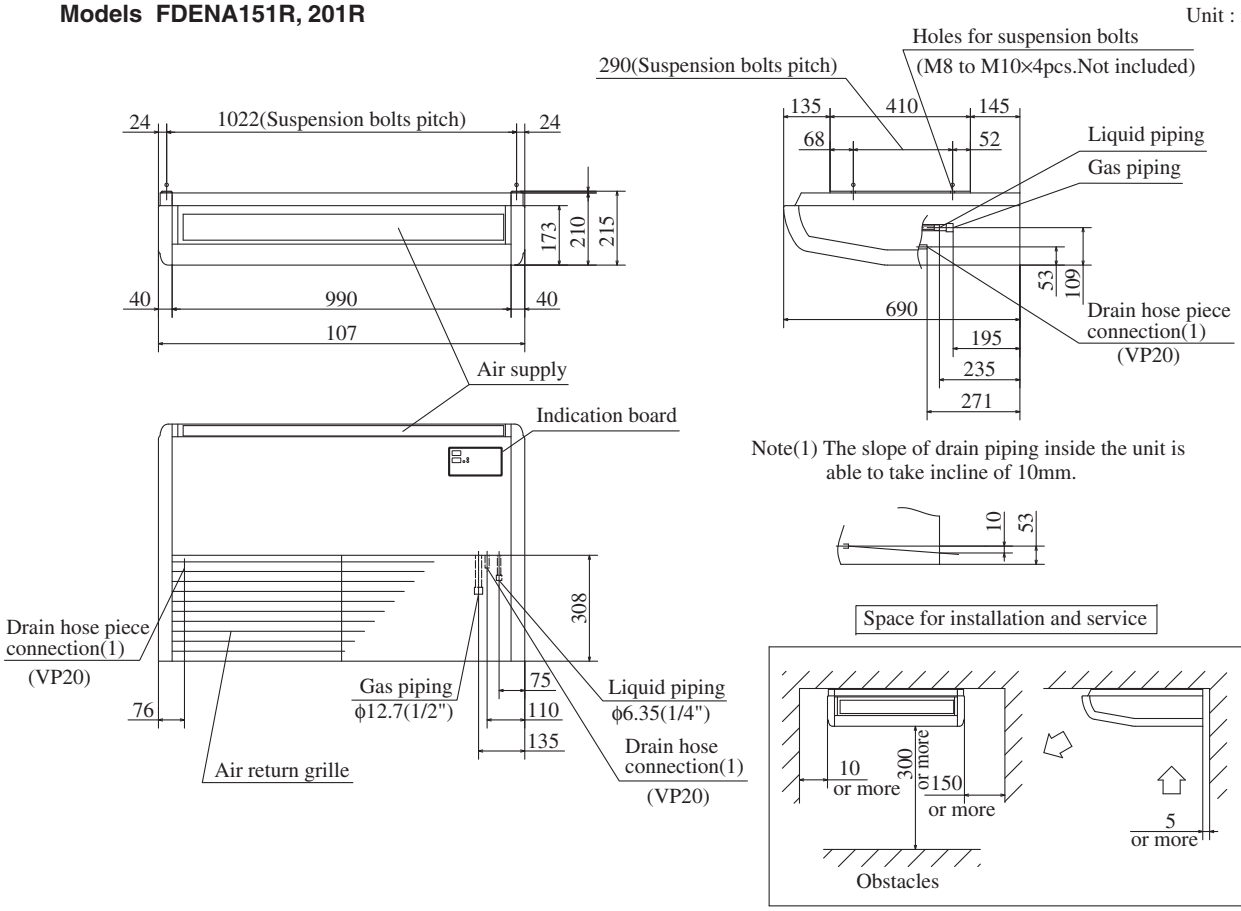
Space for installation and service



(e) Ceiling suspended type (FDEN)

Models FDENA151R, 201R

Unit : mm

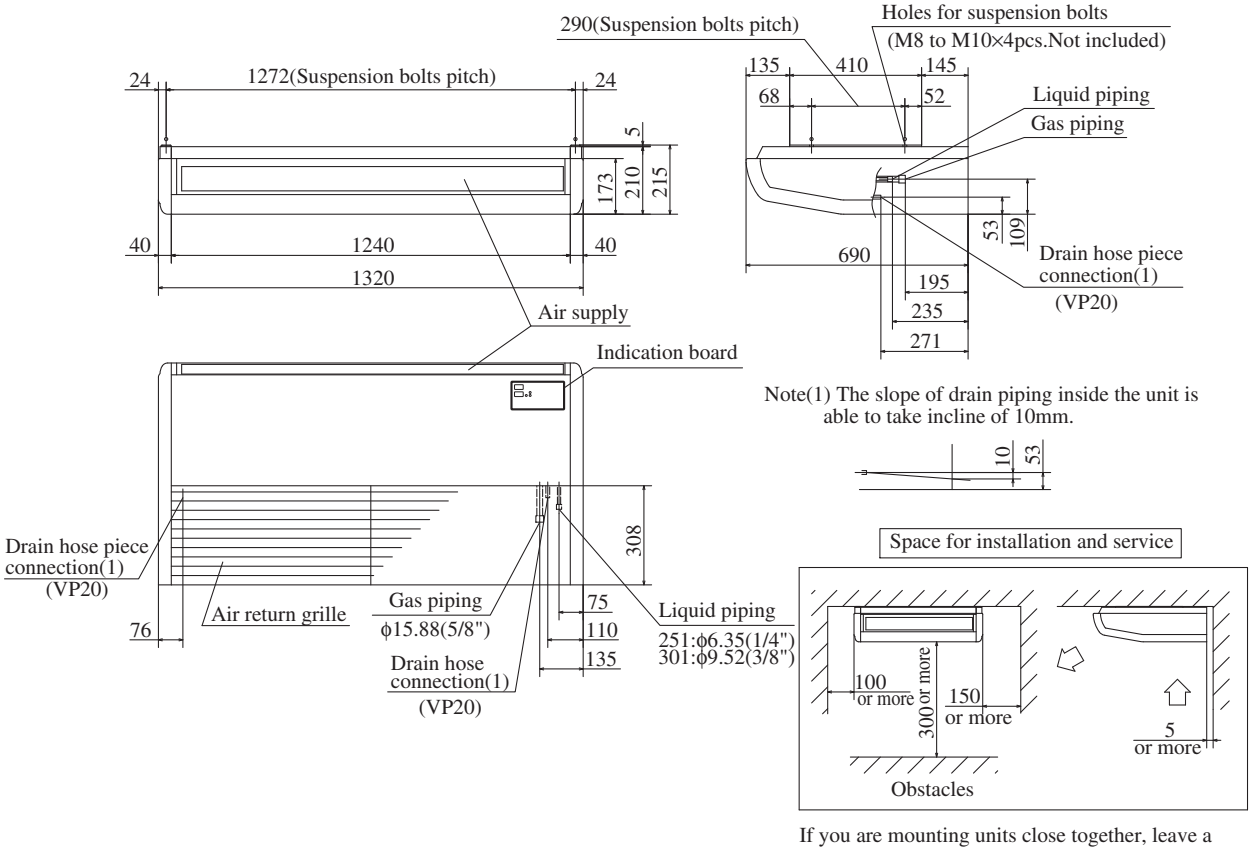


Note(1) The slope of drain piping inside the unit is able to take incline of 10mm.

If you are mounting units close together, leave a space of 4000 or greater between units.

Models FDENA251R, 301R

Unit : mm

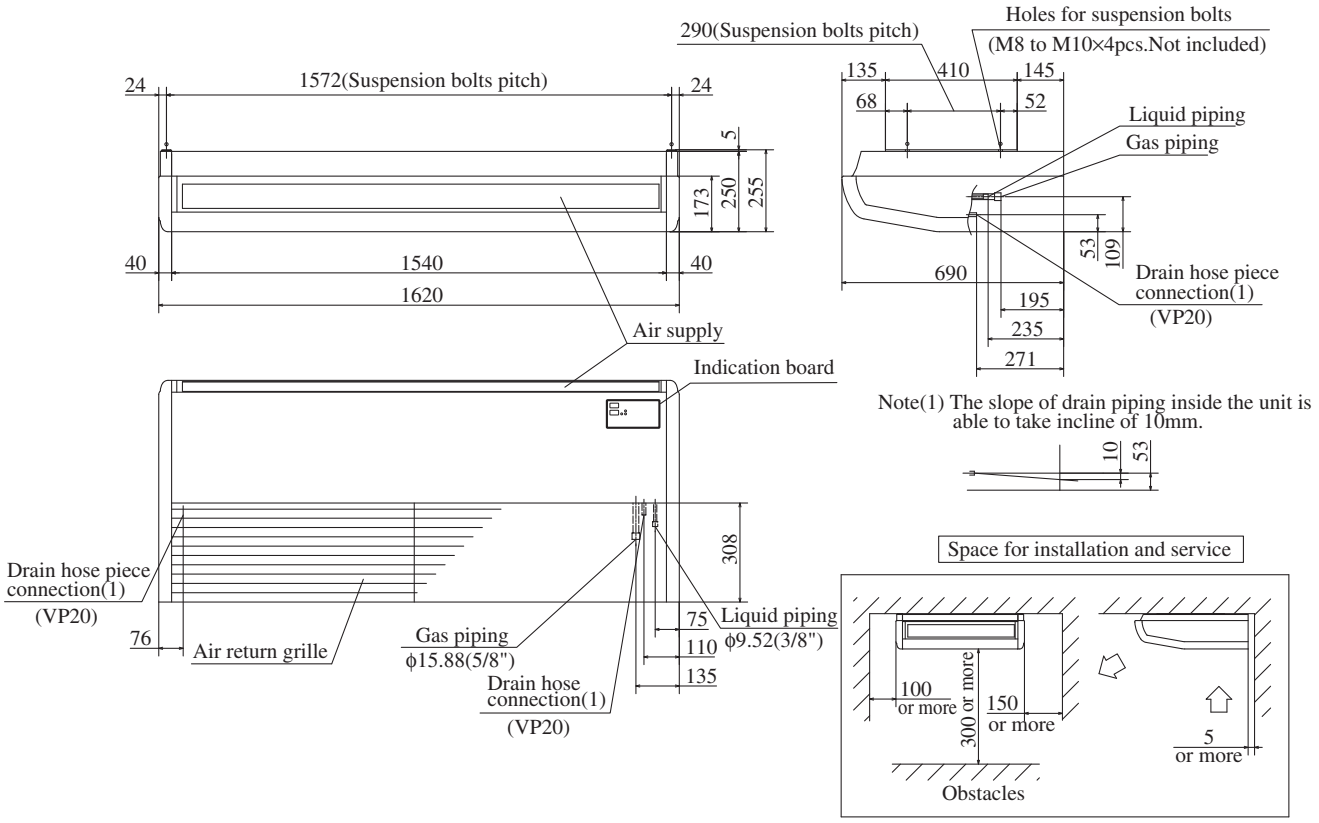


Note(1) The slope of drain piping inside the unit is able to take incline of 10mm.

If you are mounting units close together, leave a space of 4500 or greater between units.

Models FDENA401R, 501R, 601R

Unit : mm



Note(1) The slope of drain piping inside the unit is able to take incline of 10mm.

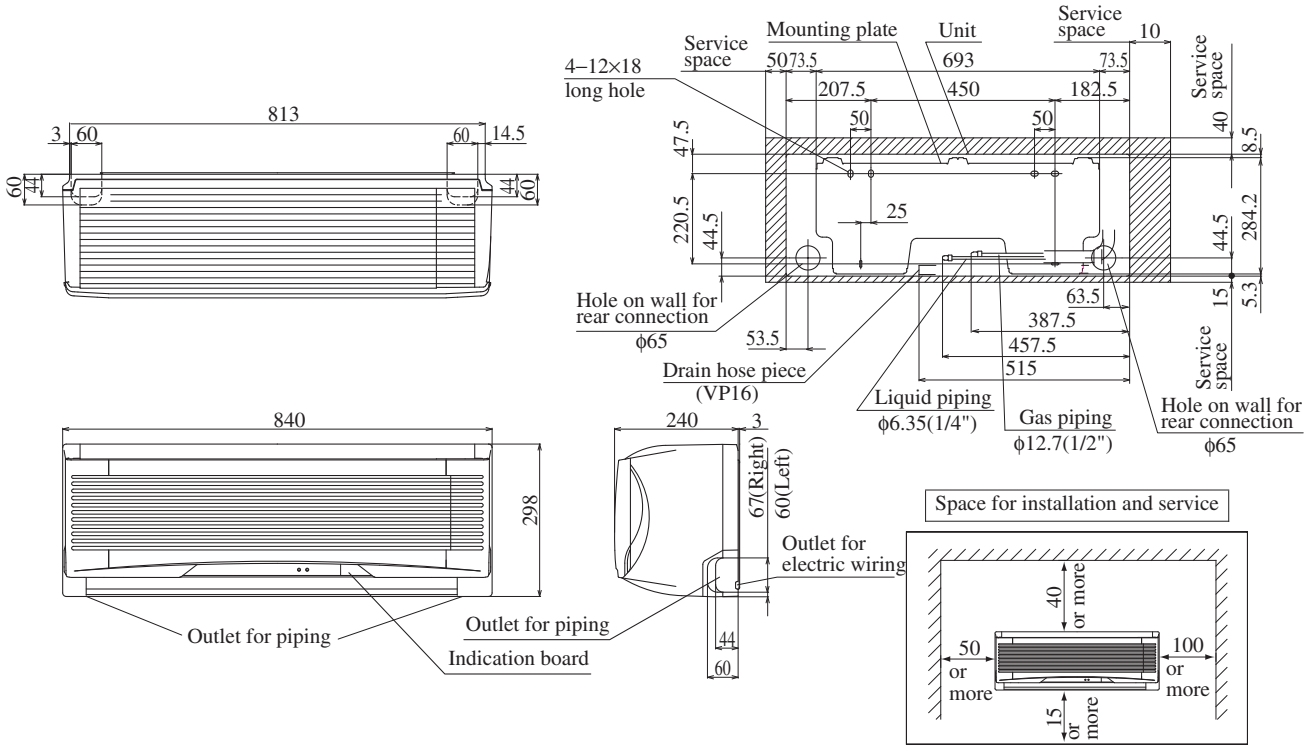
If you are mounting units close together, leave a space of 5000 or greater between units.

(f) Wall mounted type (FDKN)

Model FDKNA151R, 201R

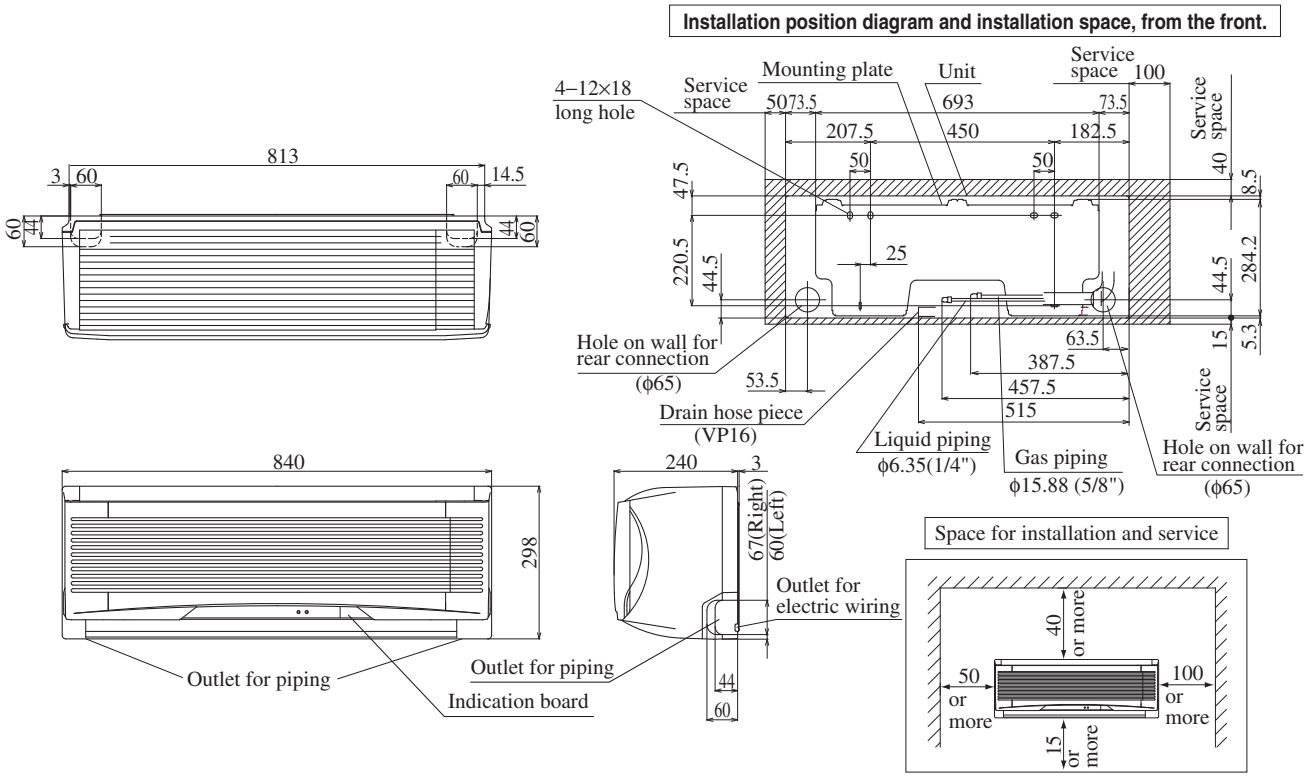
Unit : mm

Installation position diagram and installation space, from the front.



Model FDKNA251R

Unit : mm

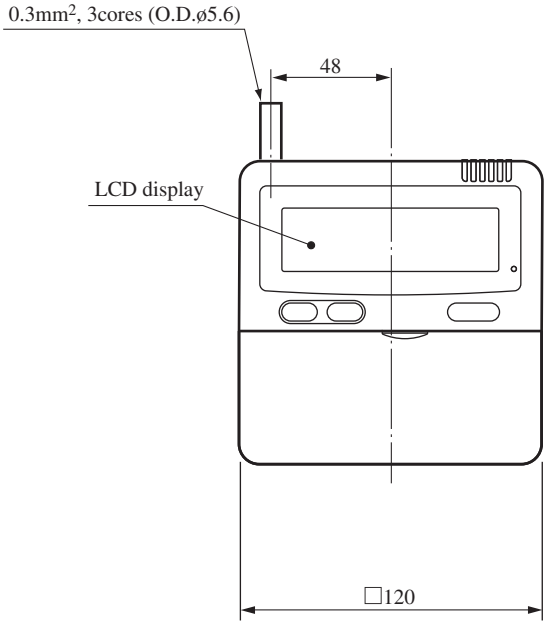


(2) Remote controller (Optional parts)

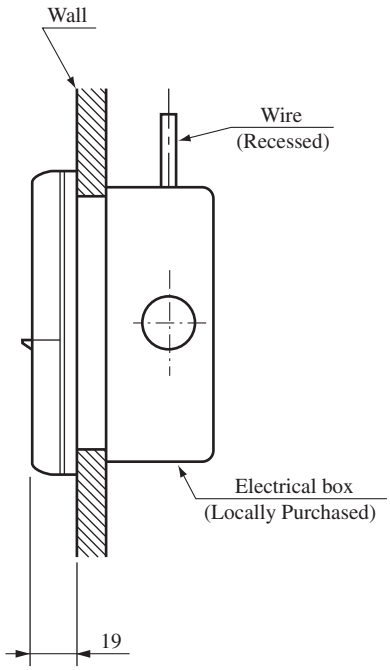
(a) Wired remote controller

Unit : mm

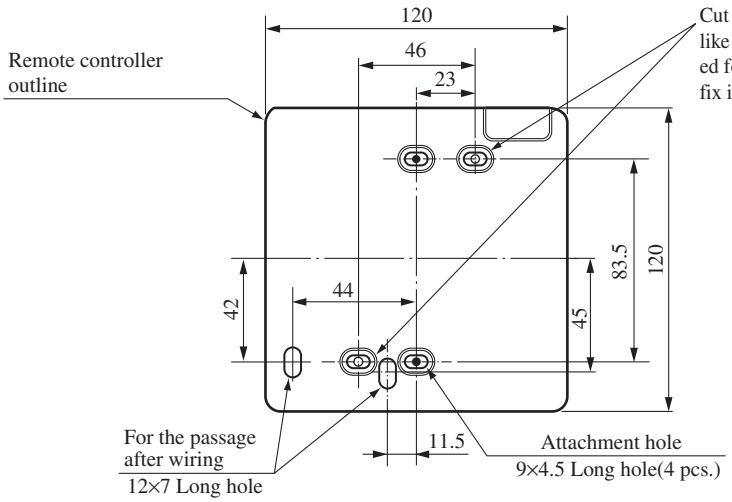
Installation with wiring exposed



Installation with wiring recessed



Remote controller mounting dimensions



Precaution in Extending the Remote control cord

▶ Maximum total extension 600m.

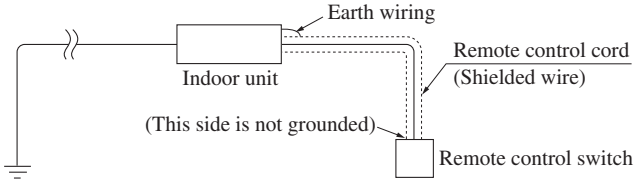
The cord should be a shielded wire.

● For all types : 0.3mm² × 3 cores

Note: (1) Use cables up to 0.5mm² (maximum) for those laid inside the remote control unit casing and connect to a different size cable at a vicinity point outside the remote control unit, if necessary.

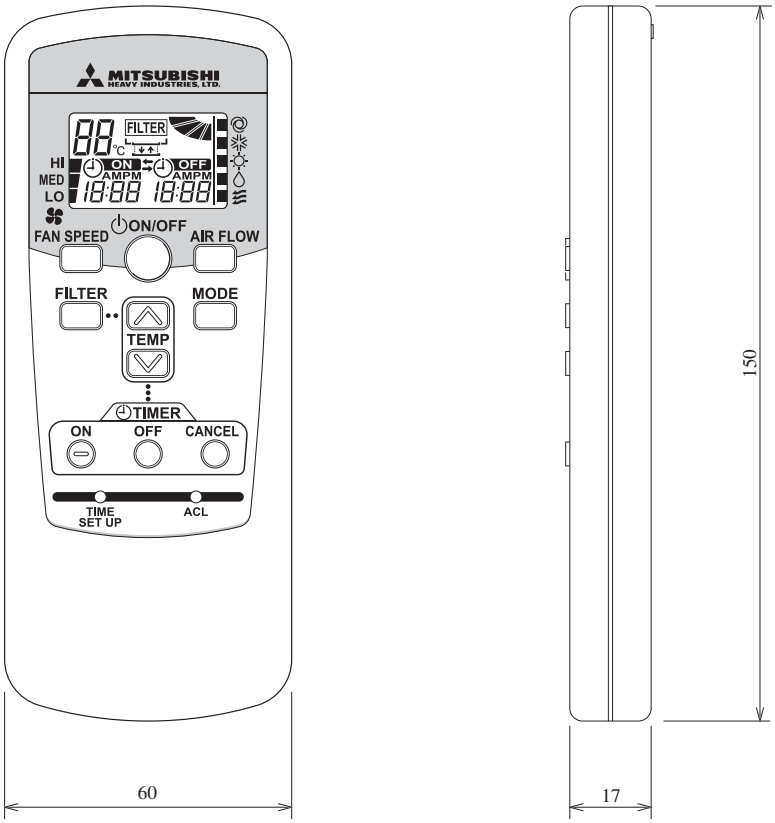
Within 100-200m ····· 0.5 mm² × 3 cores
Within 300m ····· 0.75 mm² × 3 cores
Within 400m ····· 1.25 mm² × 3 cores
Within 600m ····· 2.0 mm² × 3 cores

● The shielded wire should be grounded at one side only.



(b) Wireless remote controller

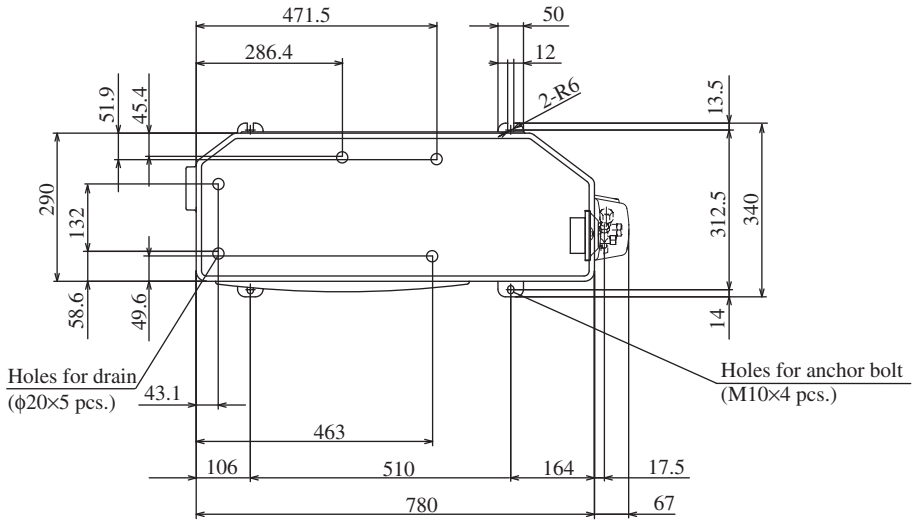
Unit: mm

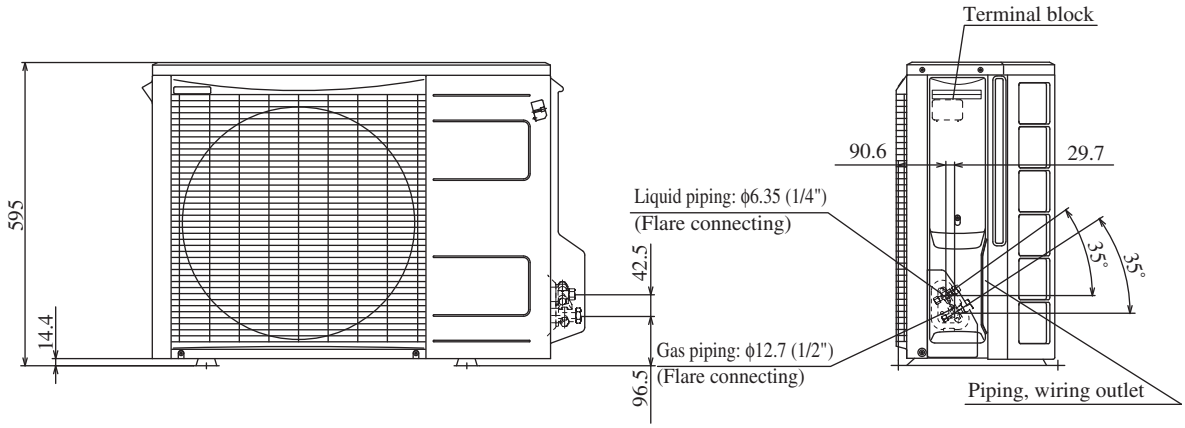


(3) Outdoor unit

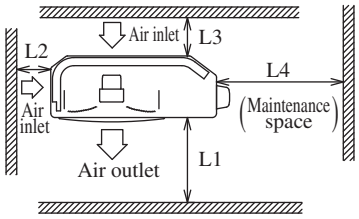
Models FDCVA151HENR, 201HENR

Unit: mm





Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L1	Open	280	280
L2	100	75	Open
L3	100	80	80
L4	250	Open	250

Notes

(1) It is prohibited to install in a space enclosed with walls at four sides.

(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.

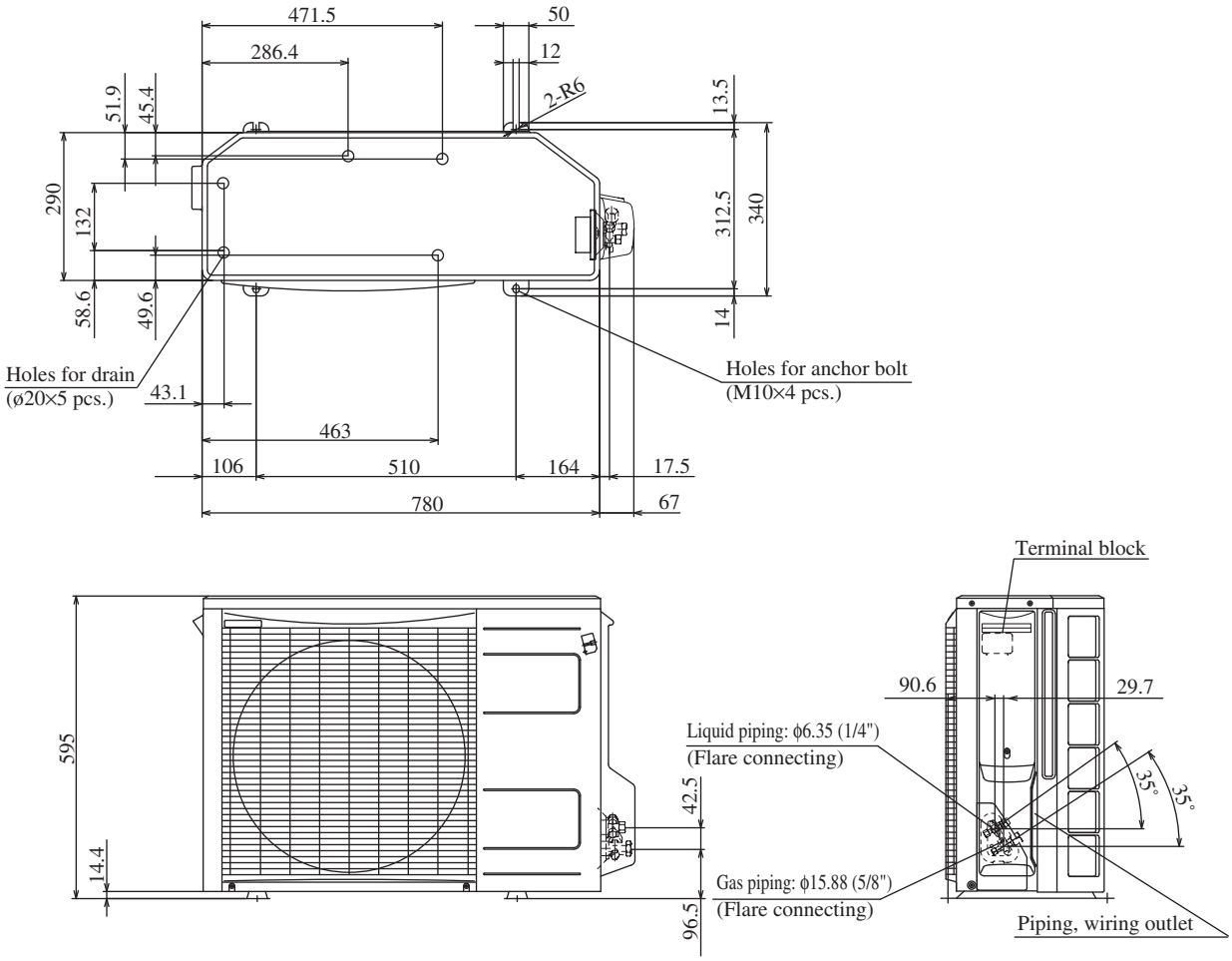
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.

(4) Secure a space of 1 m or more above the unit.

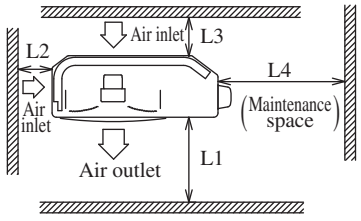
(5) Barrier standing in front of the blow outlet must be lower than the height of unit.

Model FDCVA251HENR

Unit: mm



Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L1	Open	280	280
L2	100	75	Open
L3	100	80	80
L4	250	Open	250

Notes

(1) It is prohibited to install in a space enclosed with walls at four sides.

(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.

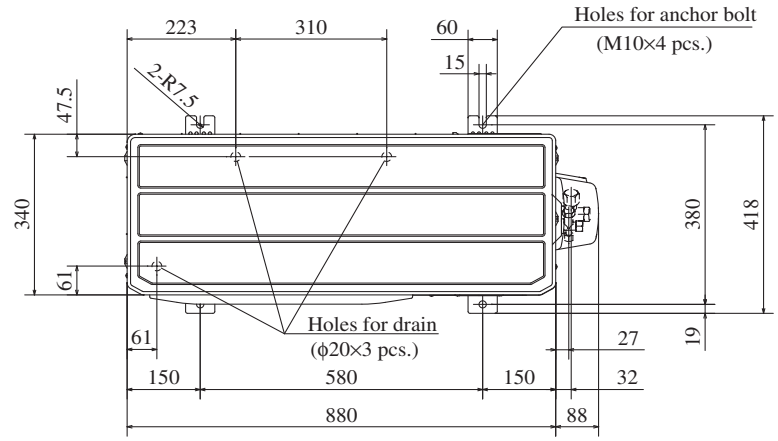
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.

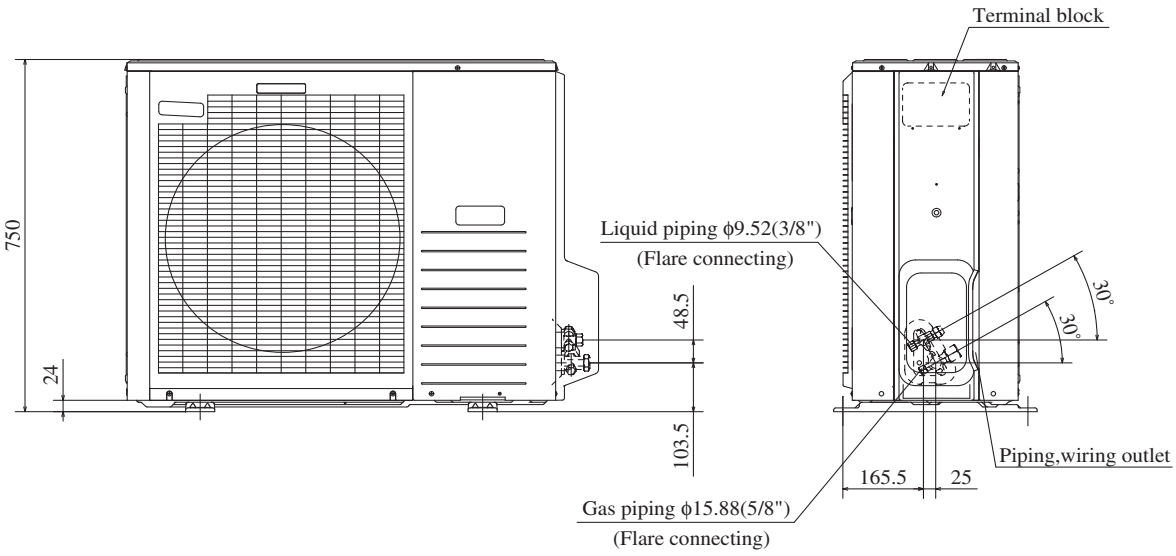
(4) Secure a space of 1 m or more above the unit.

(5) Barrier standing in front of the blow outlet must be lower than the height of unit.

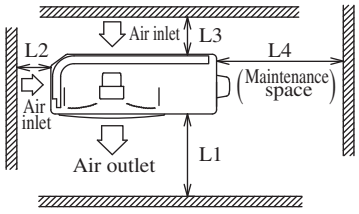
Model FDCVA302HENR

Unit: mm





Required space for maintenance and air flow



Minimum allowable space to the obstacles

Unit:mm

Mark \ Installation type	Ⅰ	Ⅱ	Ⅲ
L1	Open	Open	500
L2	300	250	Open
L3	100	150	100
L4	250	250	250

Notes

(1) It is prohibited to install in a space enclosed with walls at four sides.

(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.

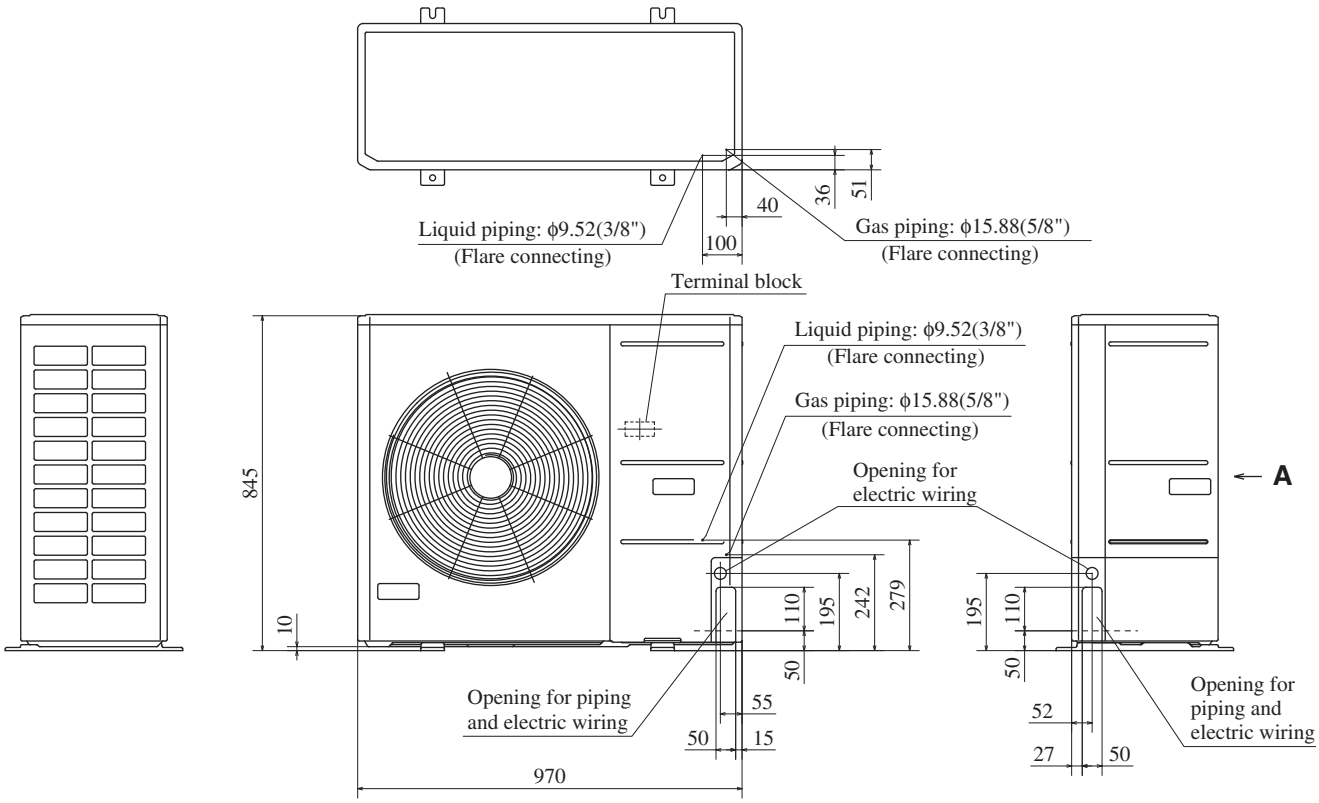
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.

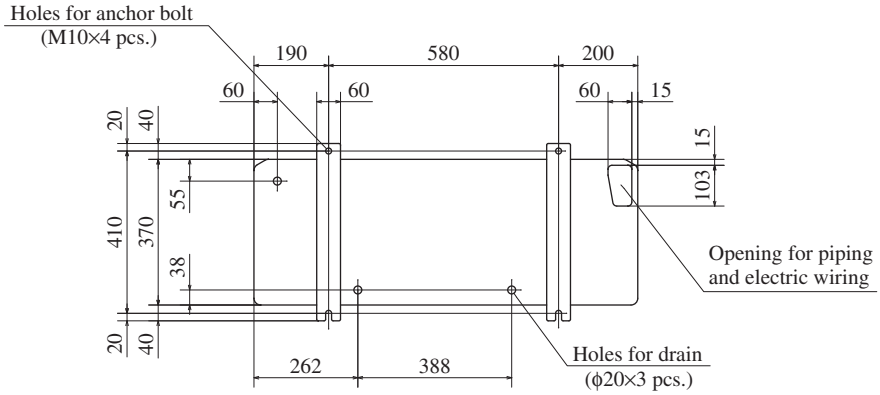
(4) Secure a space of 1 m or more above the unit.

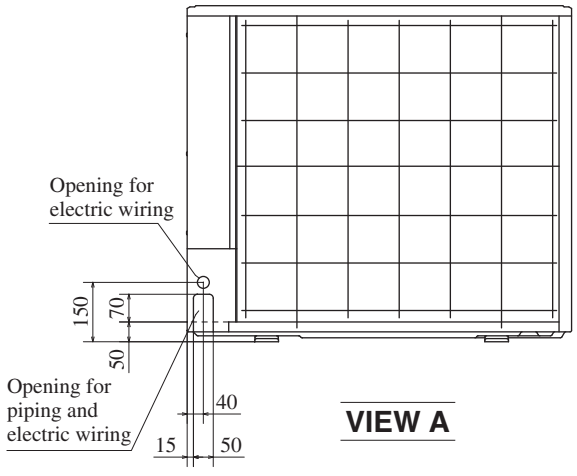
(5) Barrier standing in front of the blow outlet must be lower than the height of unit.

Models FDCVA402HENAR, 502HENAR, 602HENAR
402HESAR, 502HESAR, 602HESAR

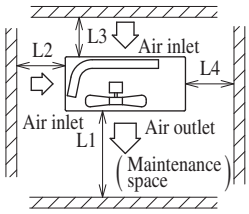
Unit : mm







Minimum allowable space to the obstacles



Unit : mm

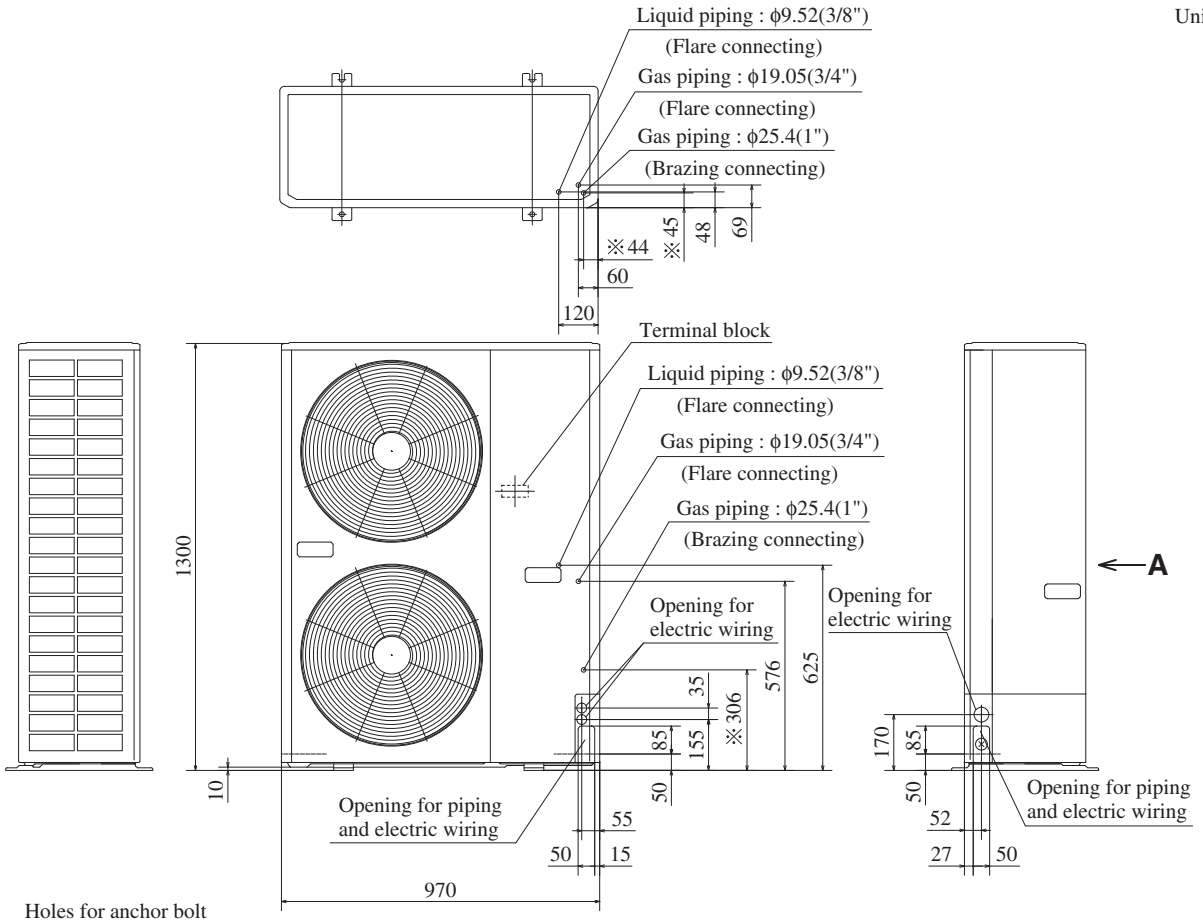
Mark \ Installation type	I	II	III
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

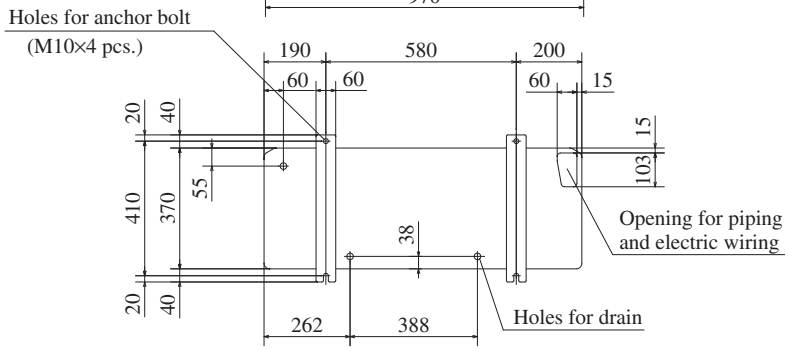
Notes

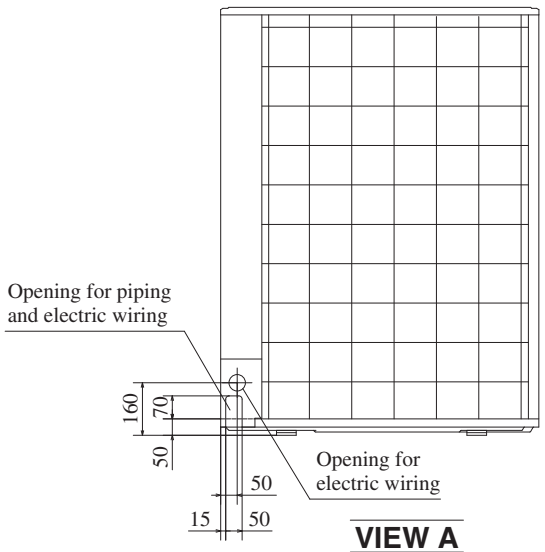
(1) It is prohibited to install in a space enclosed with walls at four sides.
(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.
(4) Secure a space of 1 m or more above the unit.
(5) Barrier standing in front of the blow outlet must be lower than the height of unit.

Model FDCVA802HESAR

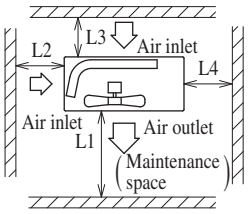
Unit: mm







Minimum allowable space to the obstacles



Unit : mm

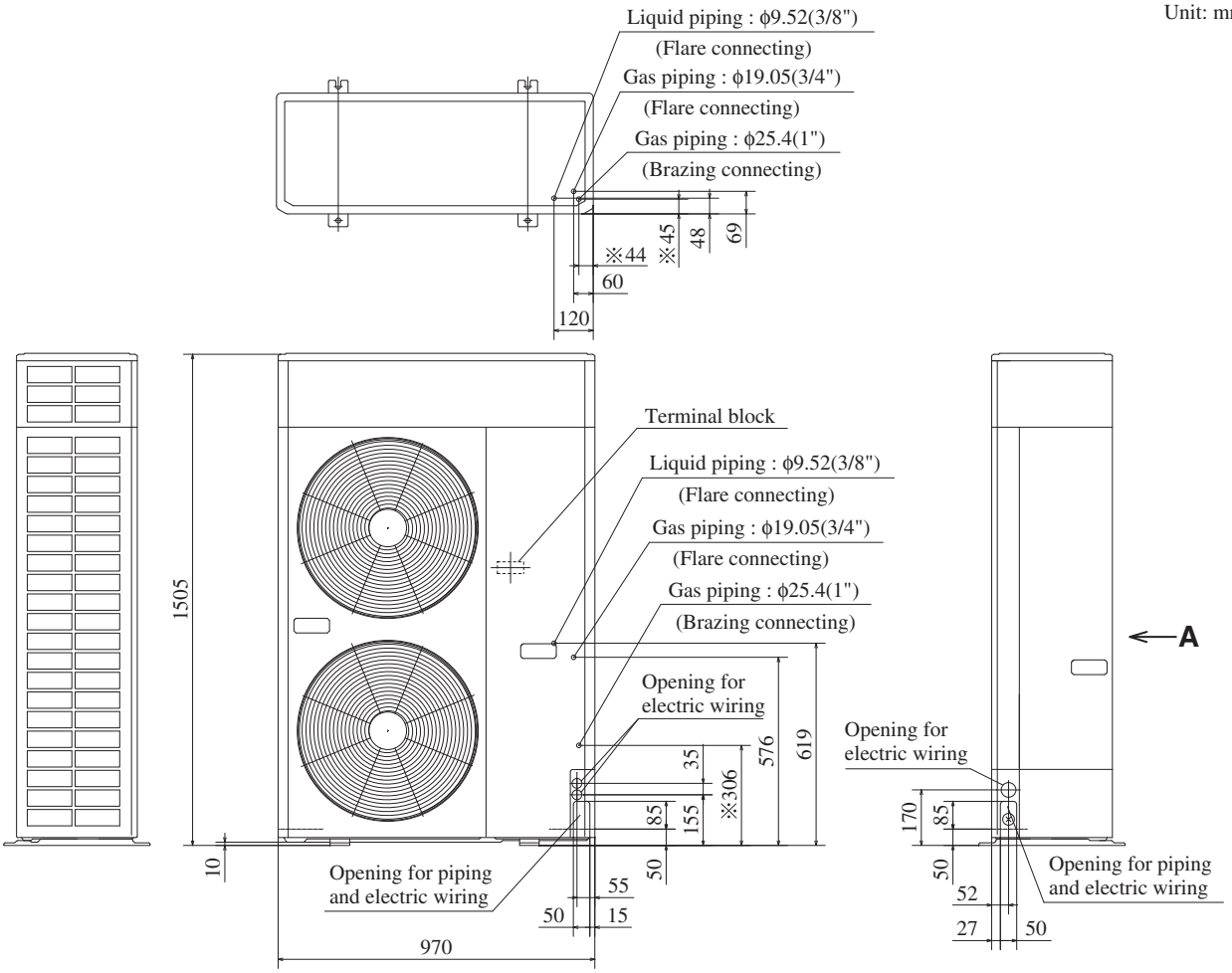
Installation type / Mark	I	II	III
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

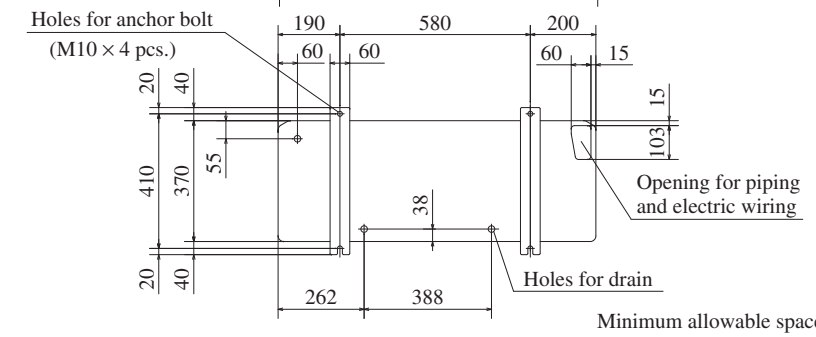
Notes

(1) It is prohibited to install in a space enclosed with walls at four sides.
(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.
(4) Secure a space of 1 m or more above the unit.
(5) Barrier standing in front of the blow outlet must be lower than the height of unit.
(6) Use the attached accessory piping for connection as the gas piping ϕ25.4(1″), and connect it with the field piping.
(7) The ※ dimensions show the connecting position of the ϕ25.4(1″) accessory piping for connection.

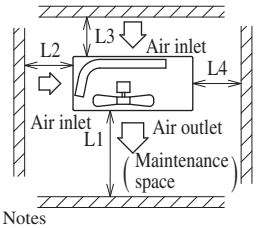
Model FDCVA1002HESAR

Unit: mm



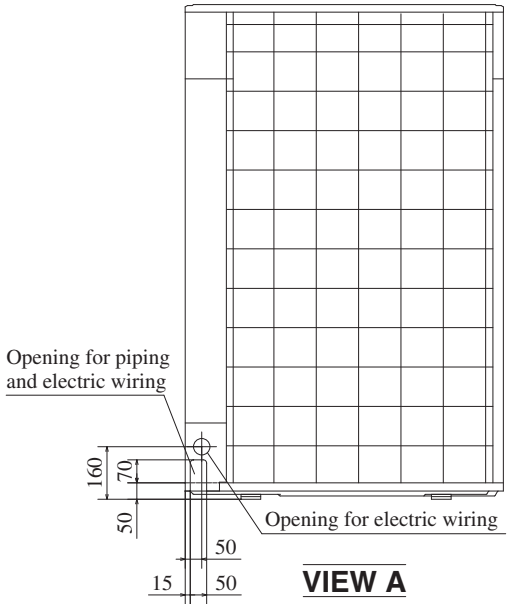


Minimum allowable space to the obstacles



Unit : mm

Mark \ Installation type	I	II	III
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5



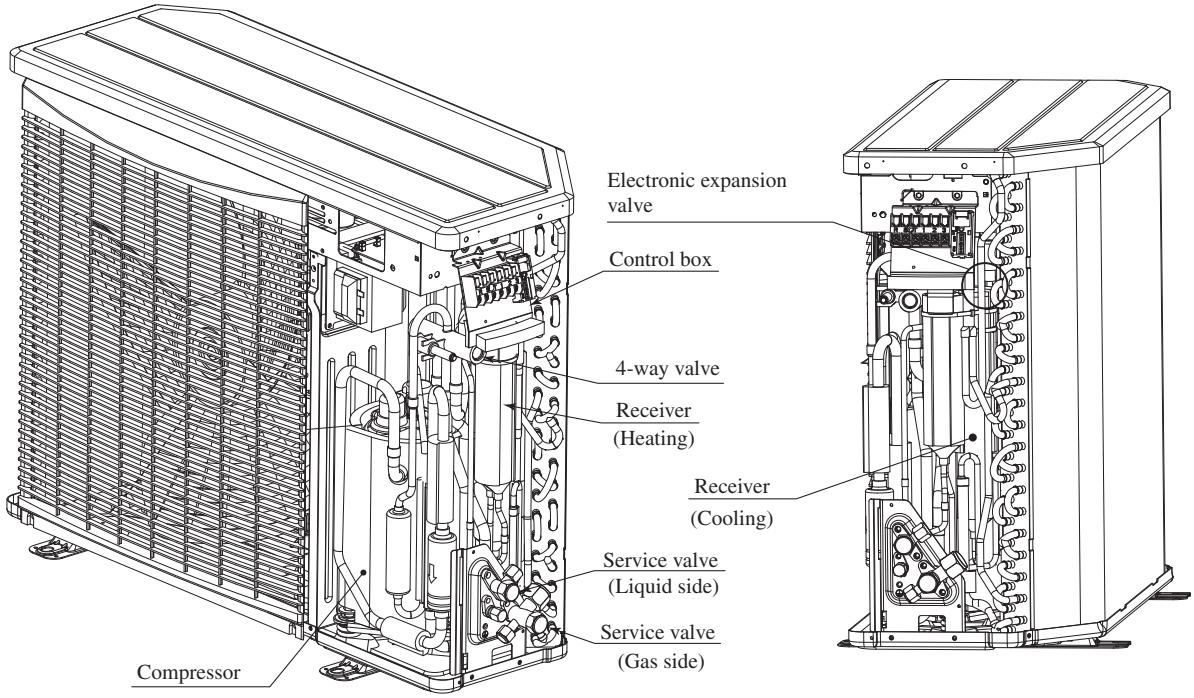
Notes

(1) It is prohibited to install in a space enclosed with walls at four sides.
(2) Unit must be secured with anchor bolts.
Anchor bolt should not protrude more than 15 mm above the surface.
(3) Where strong winds blow, the blow outlet must be oriented at right angle against the wind direction.
(4) Secure a space of 1 m or more above the unit.
(5) Barrier standing in front of the blow outlet must be lower than the height of unit.
(6) Use the attached accessory piping for connection as the gas piping ϕ25.4(1″), and connect it with the field piping.
(7) The ※ dimensions show the connecting position of the ϕ25.4(1″) accessory piping for connection.

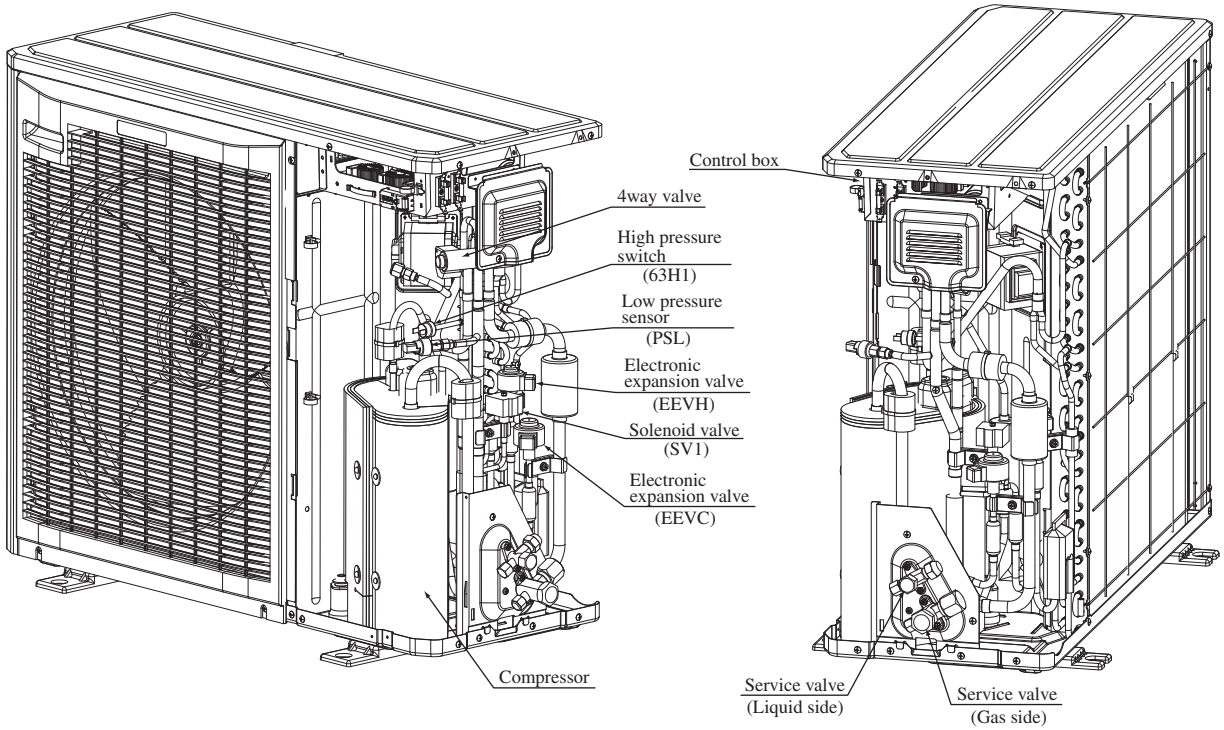
1.2.4 Inside view

(1) Outdoor unit

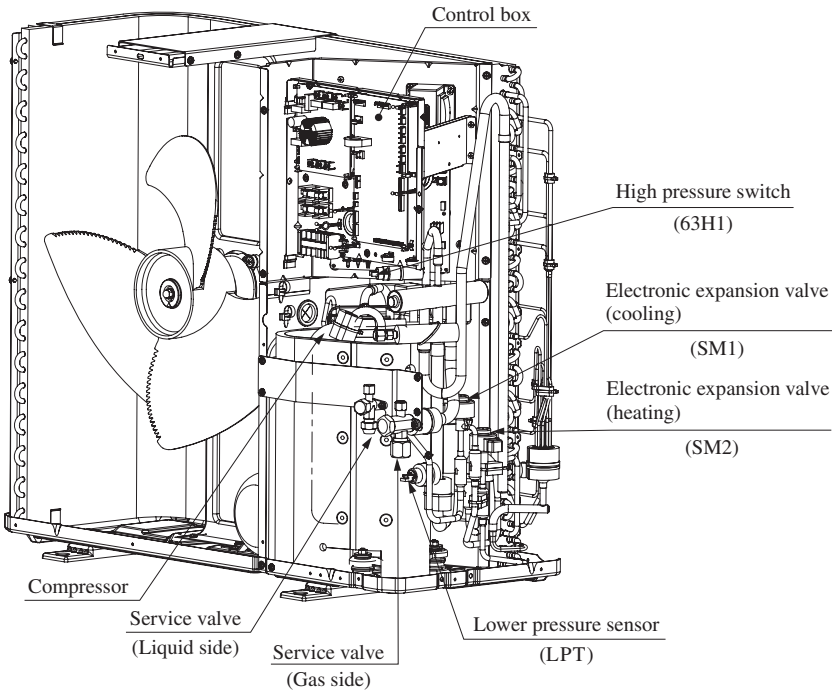
Models FDCVA151HENR, 201HENR, 251HENR



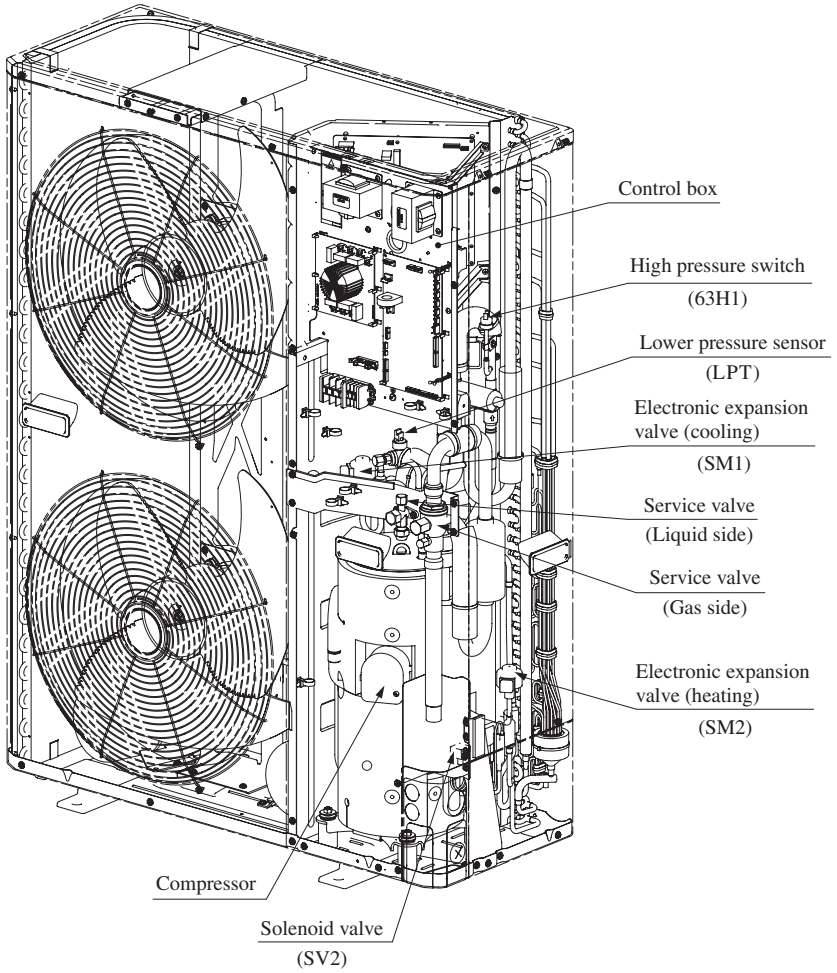
Model FDCVA302HENR



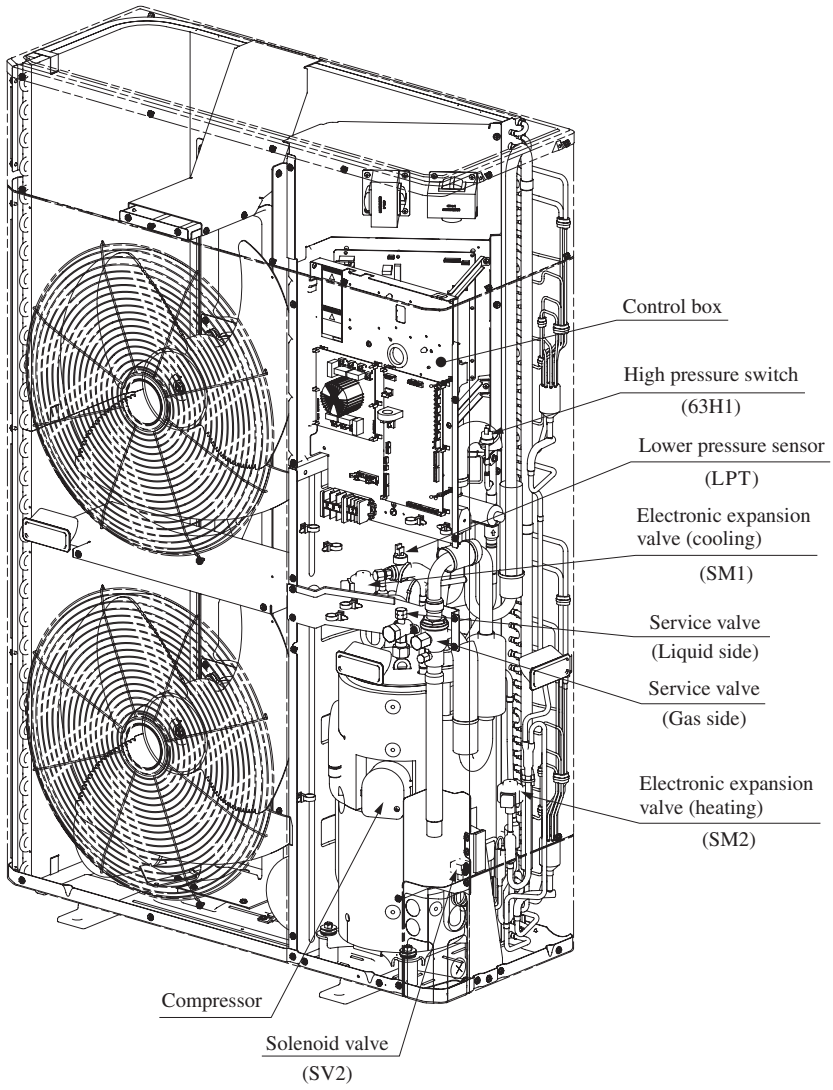
Models FDCVA402HENAR, 502HENAR, 602HENAR
402HESAR, 502HESAR, 602HESAR



Model FDCVA802HESAR



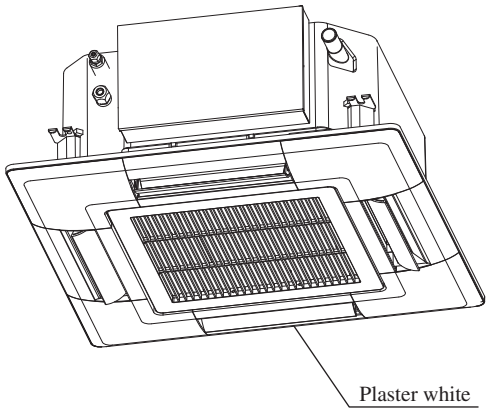
Model FDCVA1002HESAR



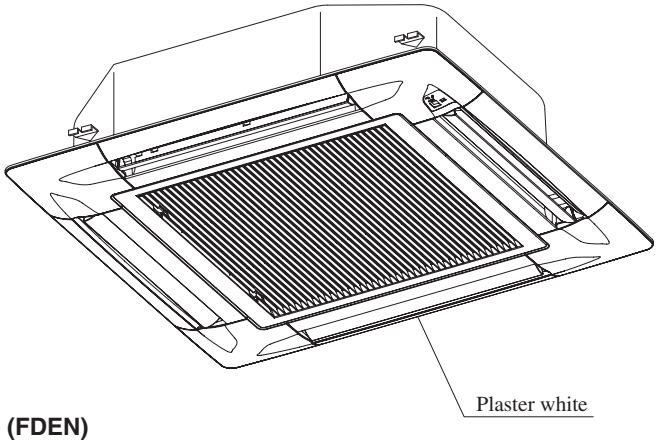
1.2.5 Exterior appearance

(1) Indoor unit

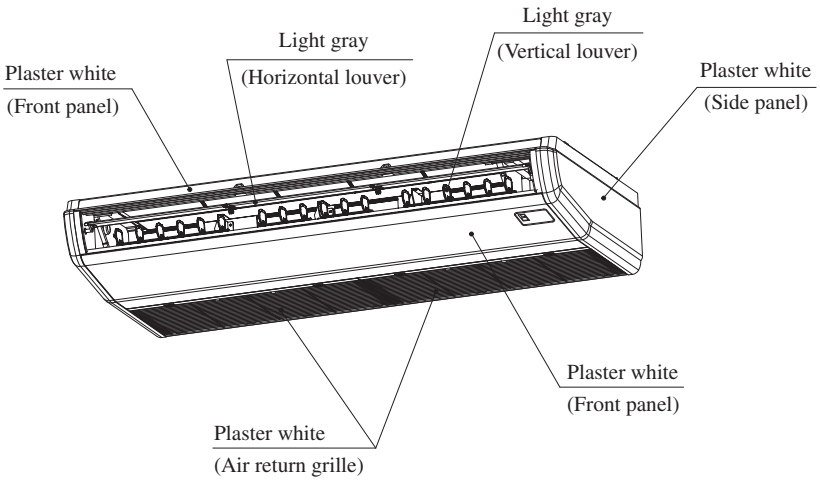
(a) Ceiling recessed compact type (FDTC)



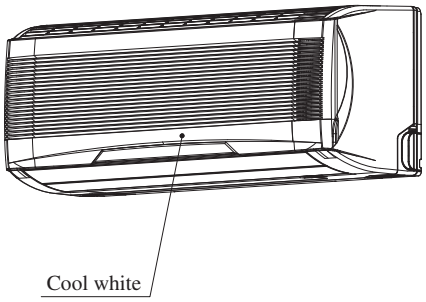
(b) Ceiling suspended type (FDT)



(c) Ceiling suspended type (FDEN)



(d) Wall mounted type (FDKN)

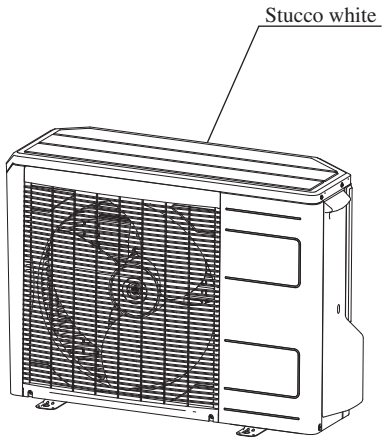


(e) Satellite ducted type (FDUM)·····Cromatofre steel plate

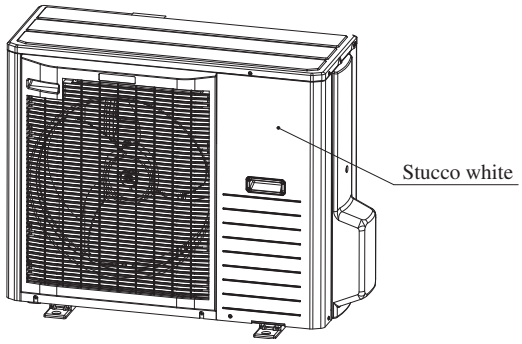
(f) High static pressure duct type (FDU) ·····Cromatofre steel plate

(2) Outdoor unit

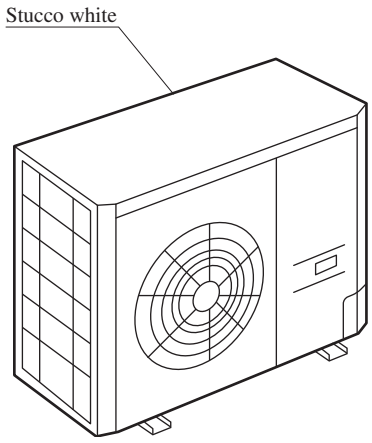
Models FDCVA151HENR, 201HENR, 251HENR



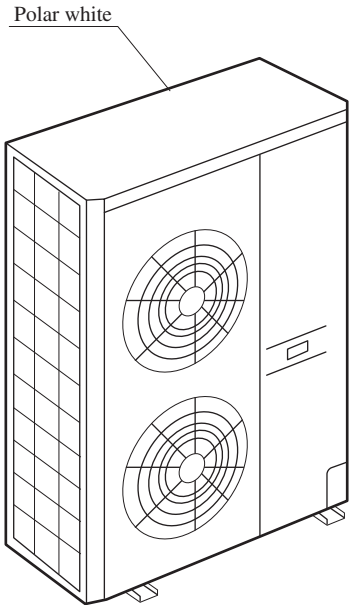
Model FDCVA302HENR



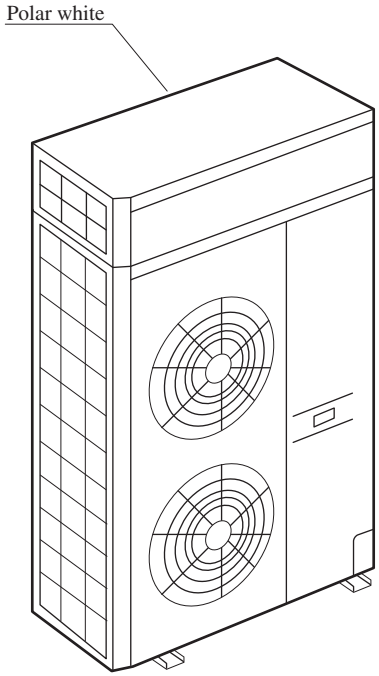
Models FDCVA402HENAR, 502HENAR, 602HENAR
402HESAR, 502HESAR, 602HESAR



Model FDCVA802HESAR



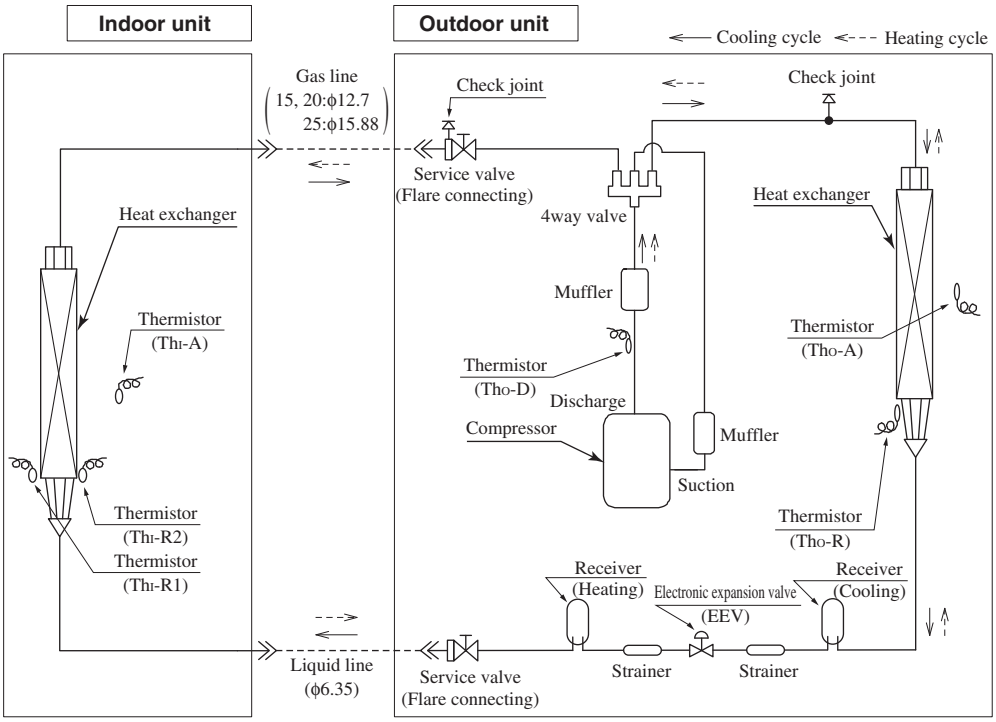
Model FDCVA1002HESAR



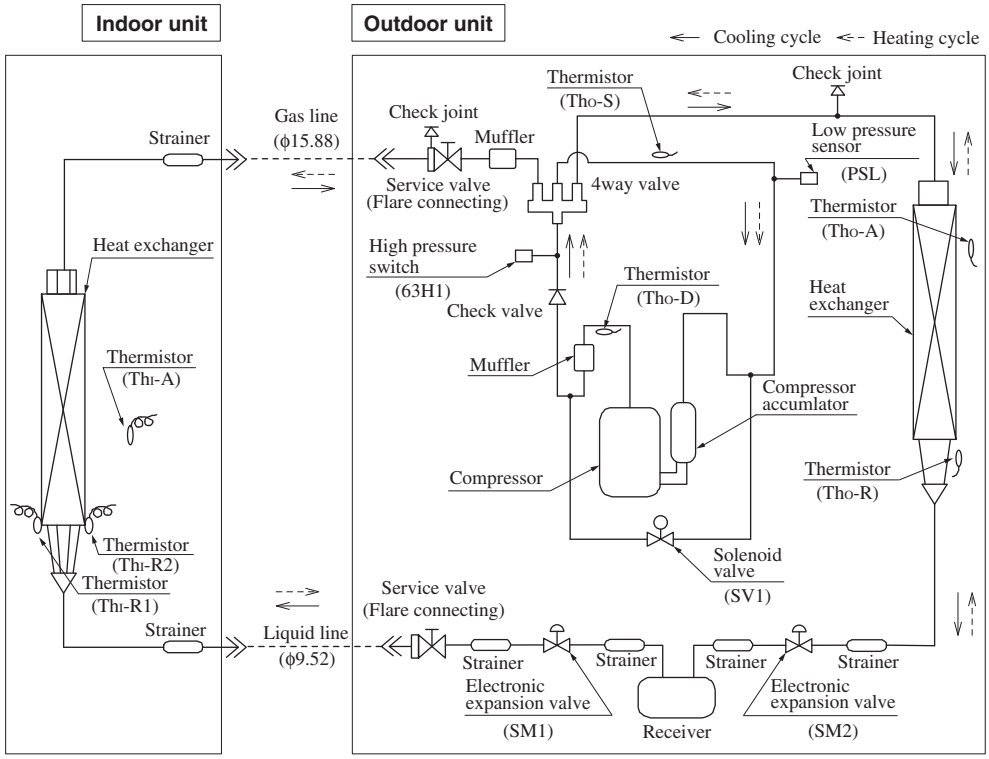
1.2.6 Piping system

(1) Single type

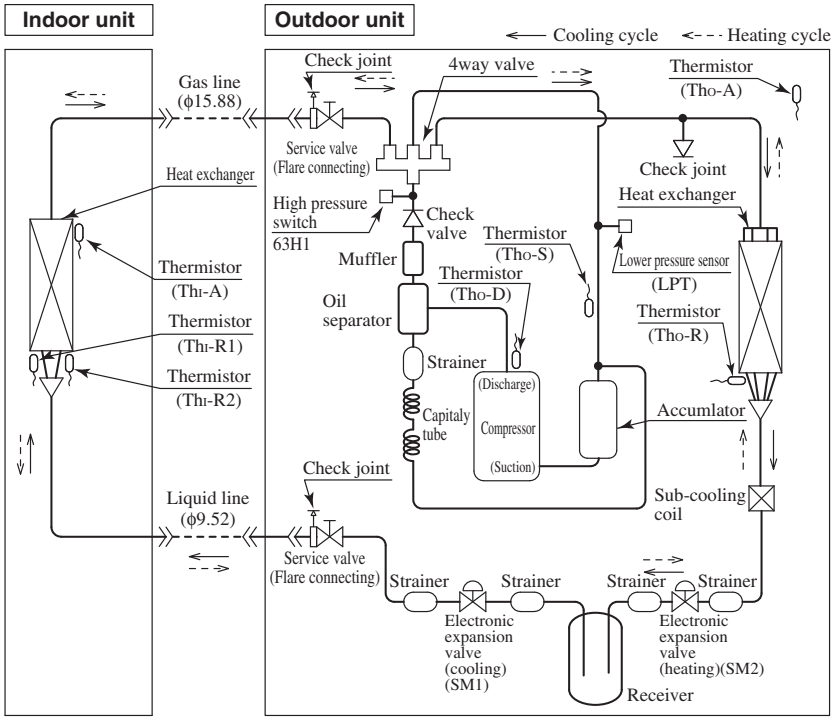
Models 152, 202, 252



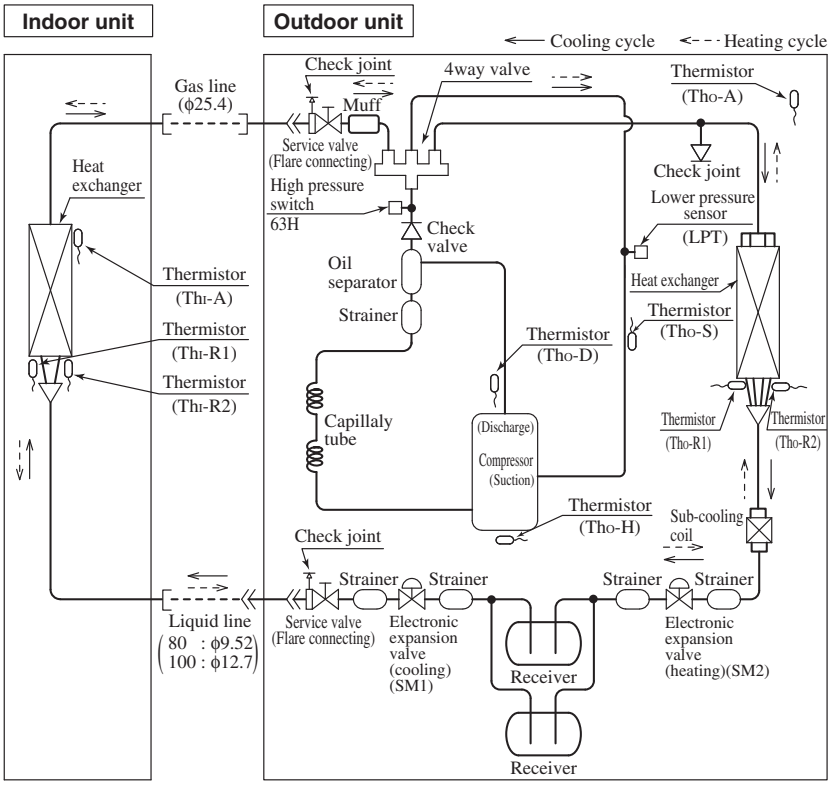
Model 302



Models 402, 502, 602

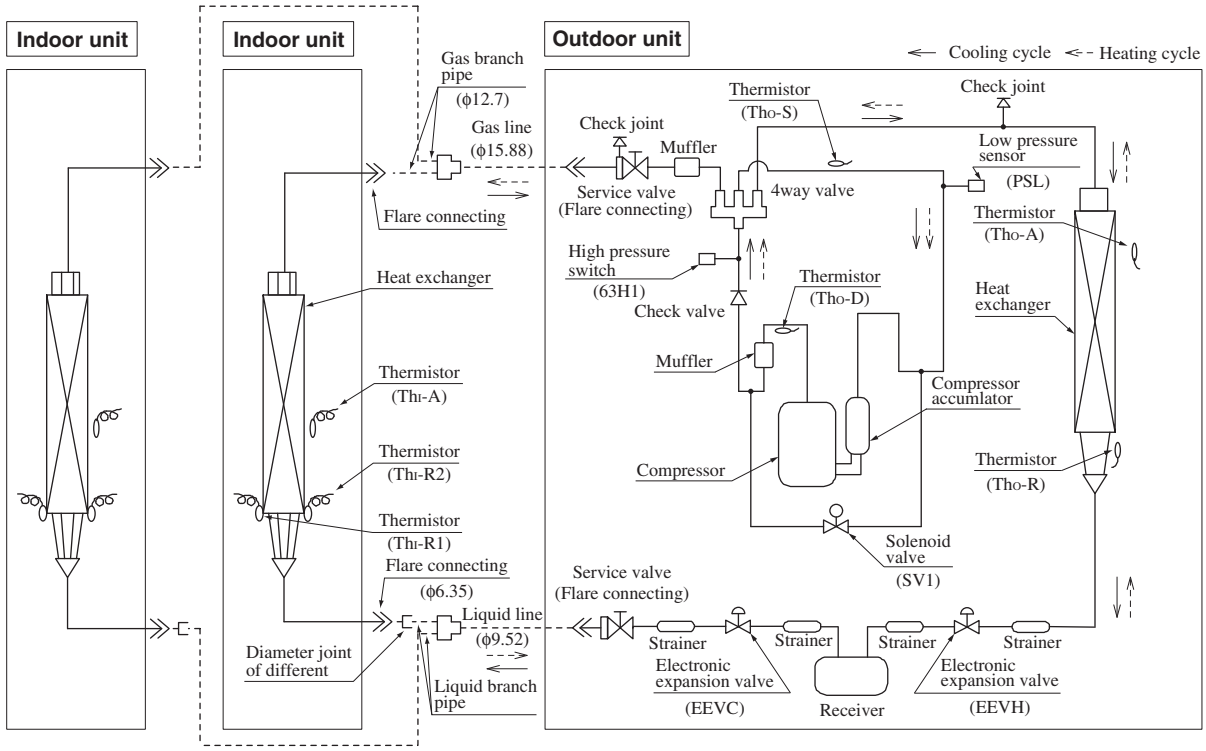


Models 802, 1002

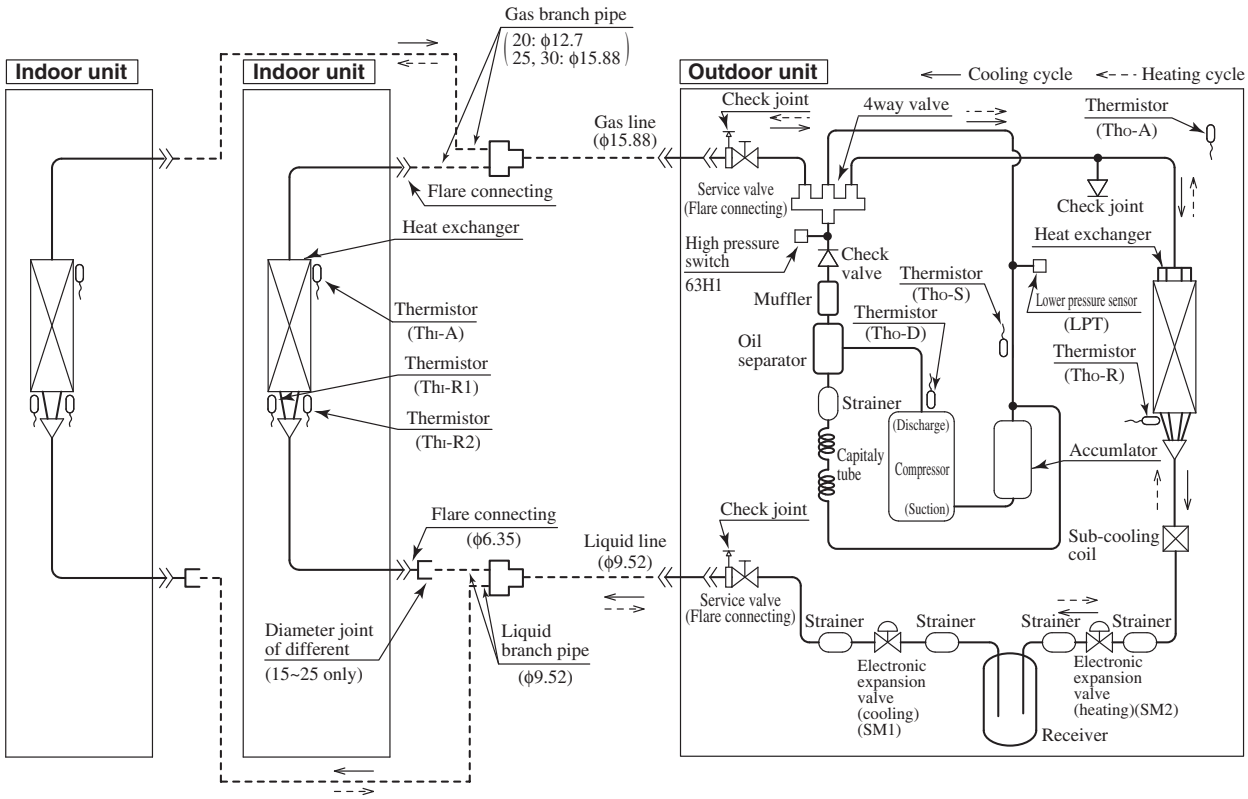


(2) Twin type

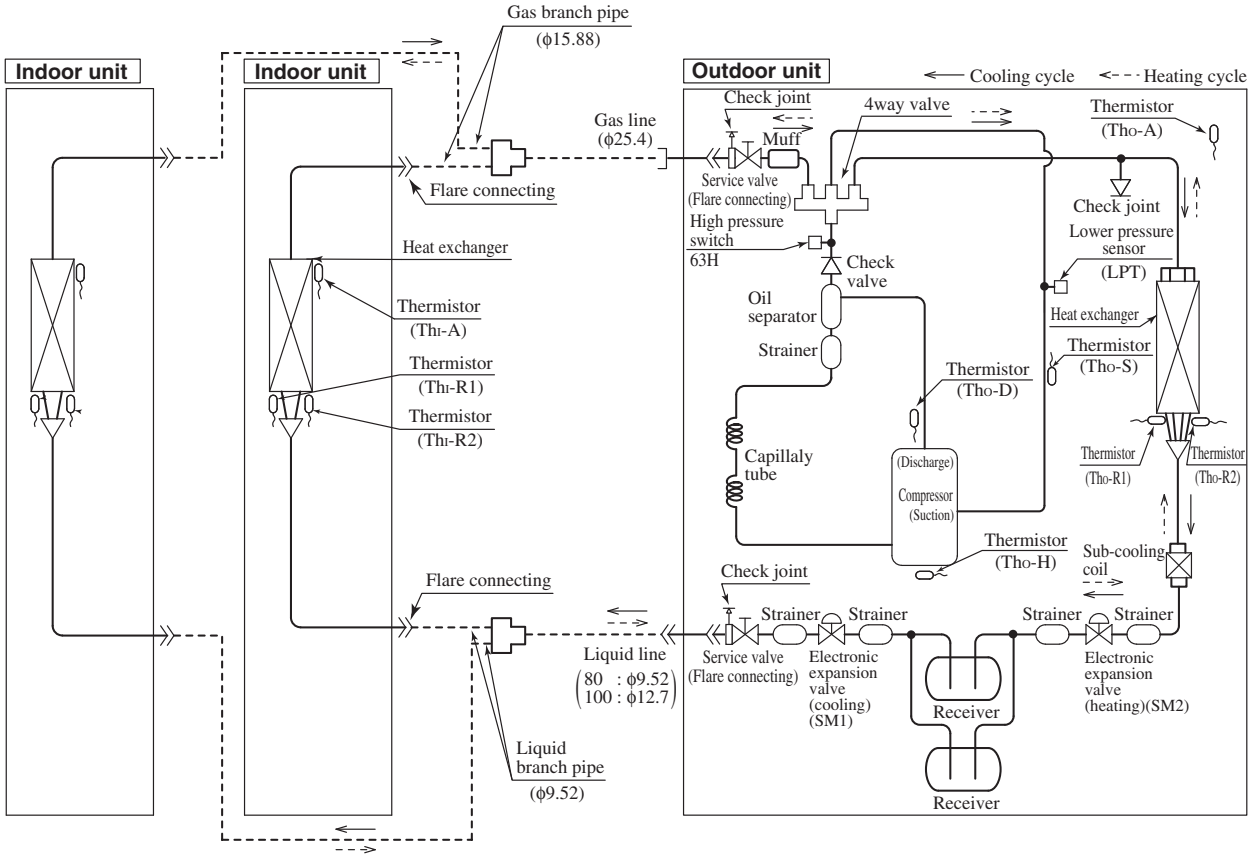
Model 302



Models 402, 502, 602

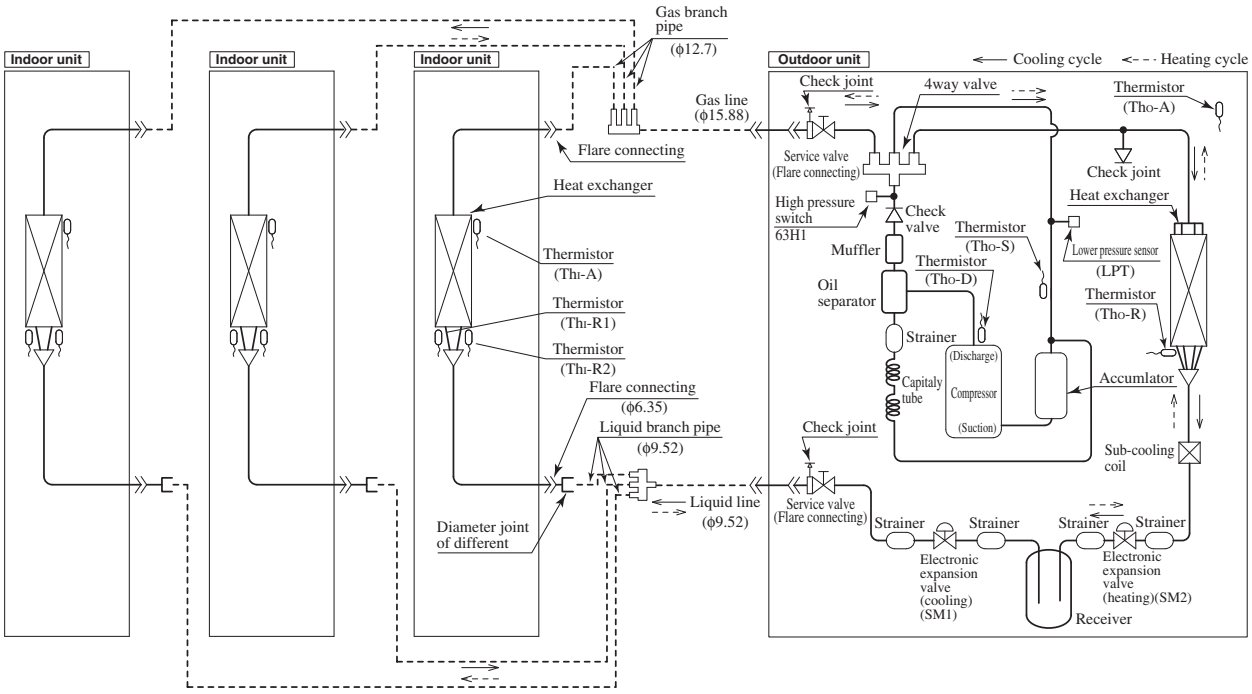


Models 802, 1002

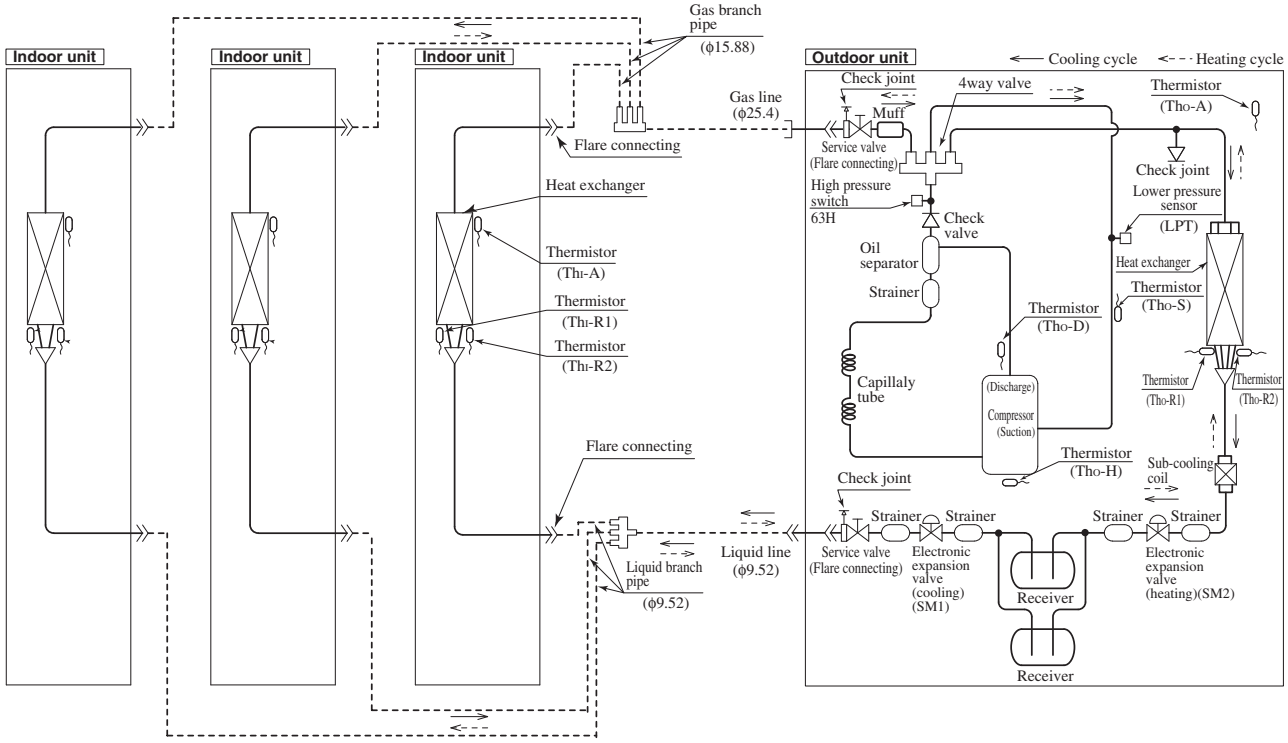


(3) Triple type

Model 602

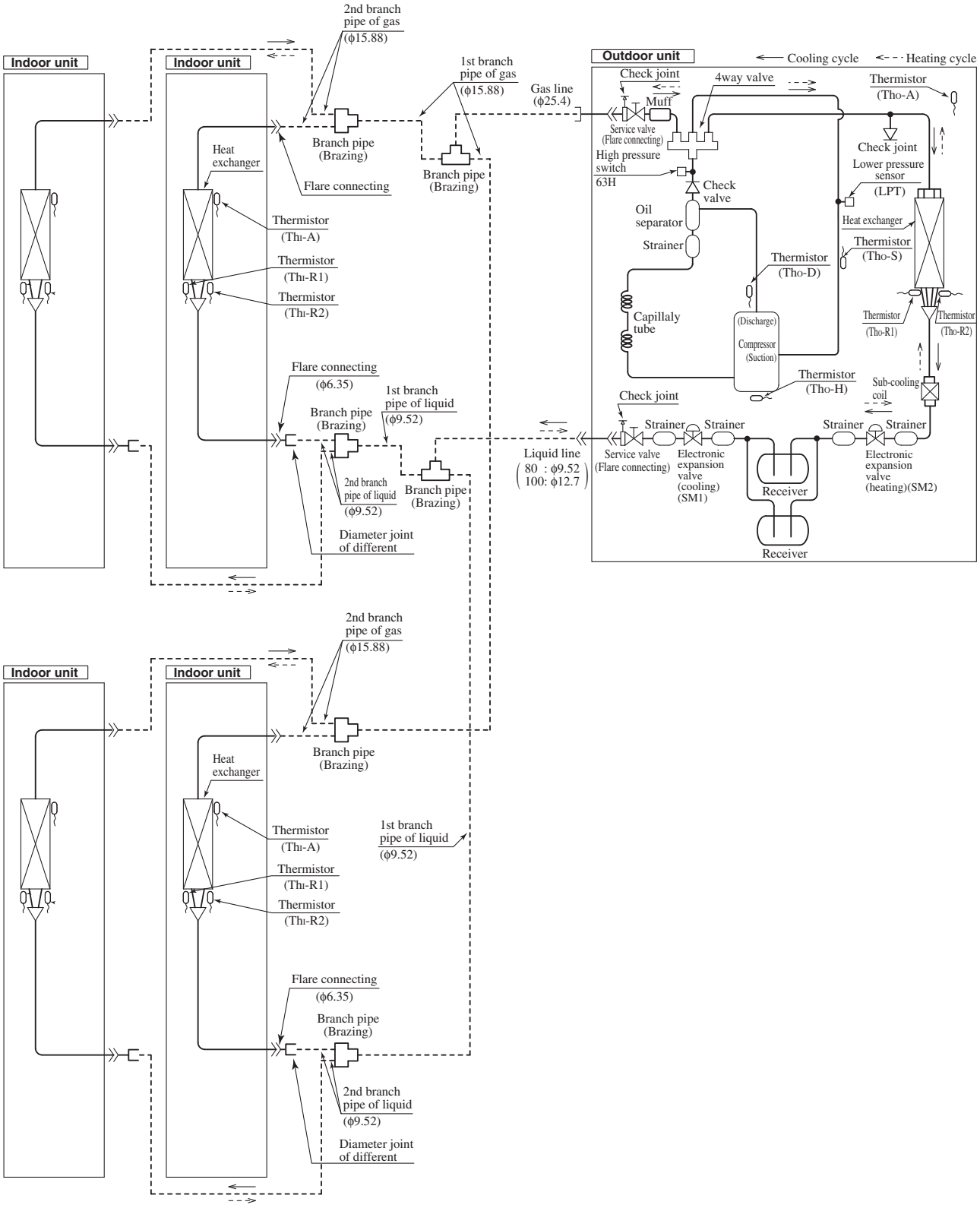


Model 802


Indoor unit
Indoor unit
Indoor unit
Outdoor unit
Cooling cycle
Heating cycle
Gas branch pipe
(ϕ15.88)
Gas line
(ϕ25.4)
Flare connecting
Heat exchanger
Thermistor
(Thı-A)
Thermistor
(Thı-R1)
Thermistor
(Thı-R2)
Flare connecting
Liquid branch pipe
(ϕ9.52)
Liquid line
(ϕ9.52)
Check joint
Muff
Service valve
(Flare connecting)
4way valve
Thermistor
(Tho-A)
Check joint
High pressure switch
63H
Check valve
Lower pressure sensor
(LPT)
Oil separator
Strainer
Heat exchanger
Thermistor
(Tho-S)
Thermistor
(Tho-D)
Capillaly tube
(Discharge)
Compressor
(Suction)
Thermistor
(Tho-R1)
Thermistor
(Tho-R2)
Thermistor
(Tho-H)
Sub-cooling coil
Check joint
Strainer
Strainer
Strainer
Strainer
Service valve
(Flare connecting)
Electronic expansion valve (cooling) (SM1)
Receiver
Electronic expansion valve (heating)(SM2)
Receiver

(4) Double twin type

Models 802, 1002



Preset point of the protective devices

Parts name	Mark	Equipped unit	152, 202, 252 model	302, 402, 502, 602 model	802, 1002 model
Thermistor (for protection over-loading in heating)	**THI-R**	Indoor unit	OFF 63˚C ON 56˚C		
Thermistor (for frost prevention)			OFF 1.0˚C ON 10˚C		
Thermistor (for detecting dis-charge pipe temp.)	**Tho-D**	Outdoor unit	OFF 105˚C ON 80˚C	OFF 115˚C ON 85˚C	OFF 135˚C ON 90˚C
High pressure switch (for protection)	**63H1**	Outdoor unit	———	OFF 4.15MPa ON 3.15MPa	
Low pressure sensor (for protection)	**LPT**	Outdoor unit	———	OFF 0.227MPa ON 0.079MPa	

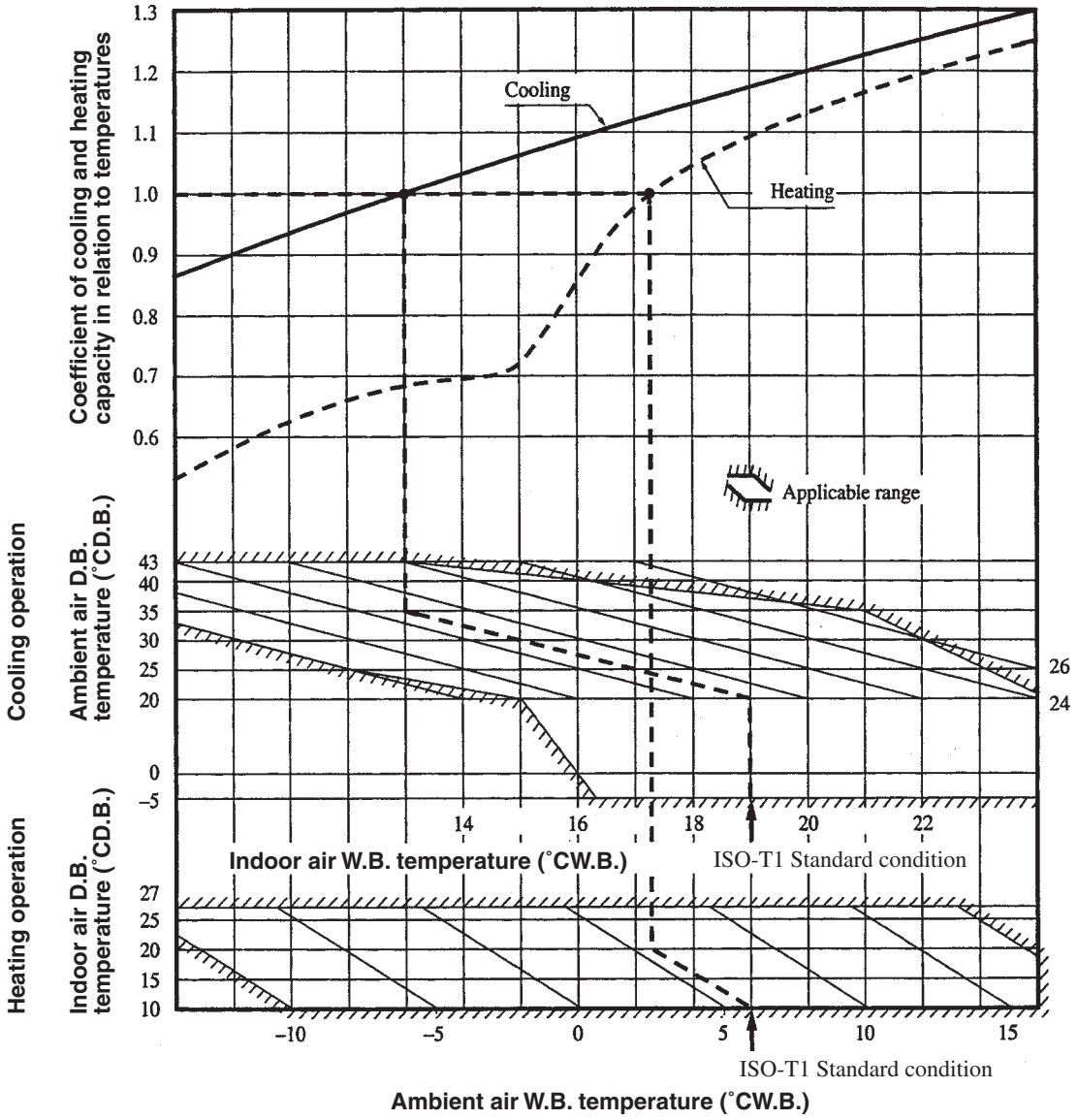
1.2.7 Selection chart

Correct the cooling and heating capacity in accordance with the conditions as follows. The net cooling and heating capacity can be obtained in the following way.

Net capacity = Capacity shown on specification × Correction factors as follows.

(1) Models 152~252

Coefficient of cooling and heating capacity in relation to temperatures



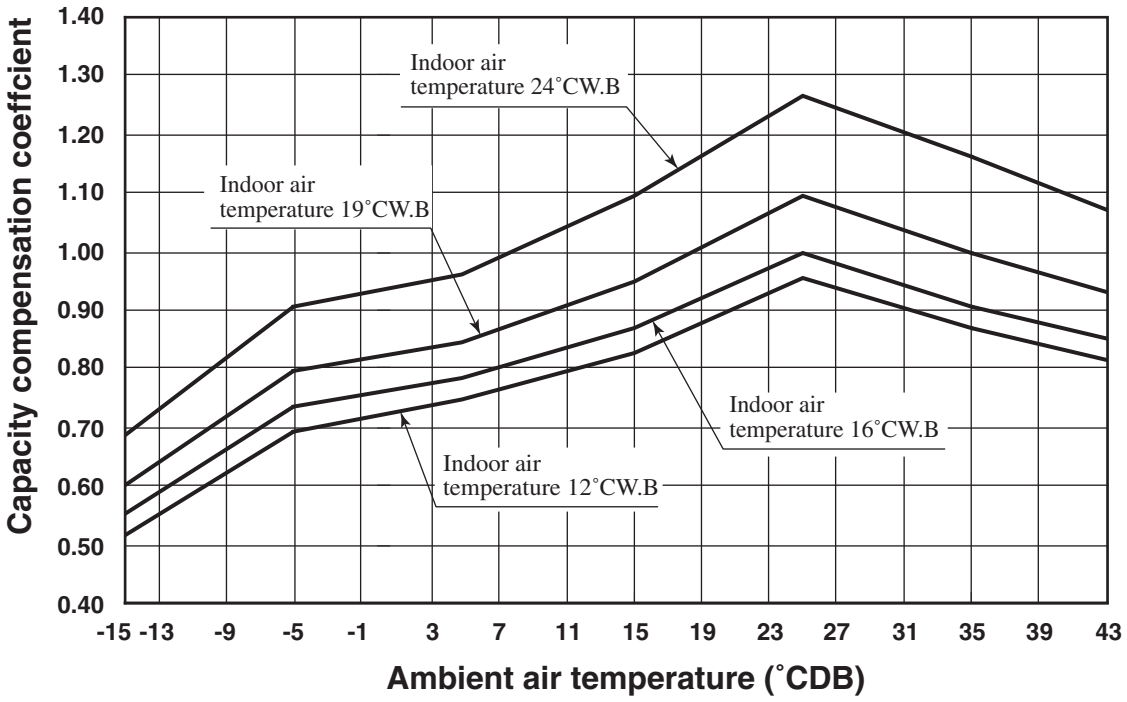
(2) Models 302~1002

Caution: In case that the operation during low ambient temperature below -5°C is expected, install the outdoor unit where it is not influenced by natural wind. Otherwise protection control by low pressure will be activated much more frequently and it will cause insufficient capacity or breakdown of the compressor in worst case.

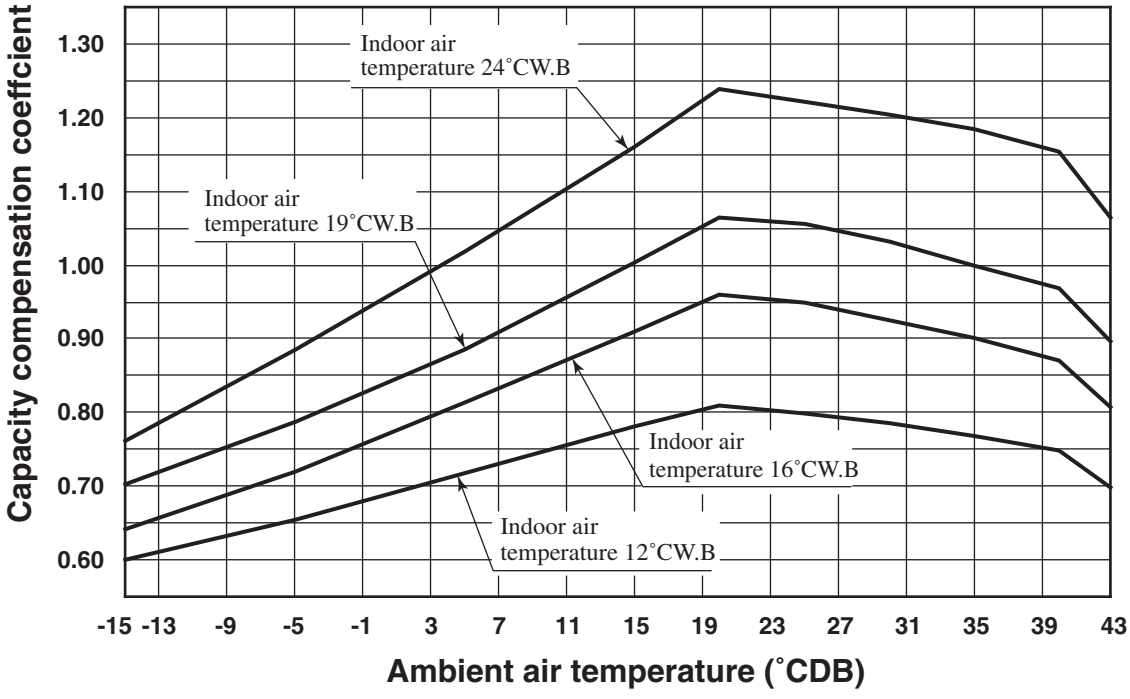
(1) Capacity compensation coeffcient

(a) Cooling

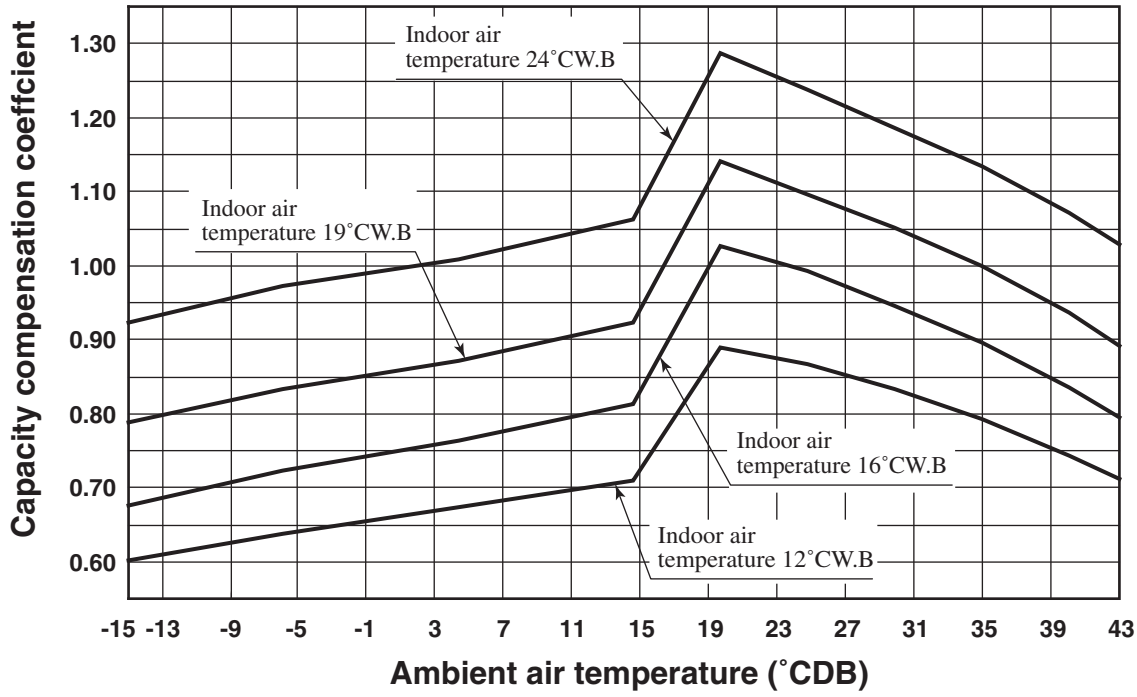
1) Model 302



2) Models 402~602

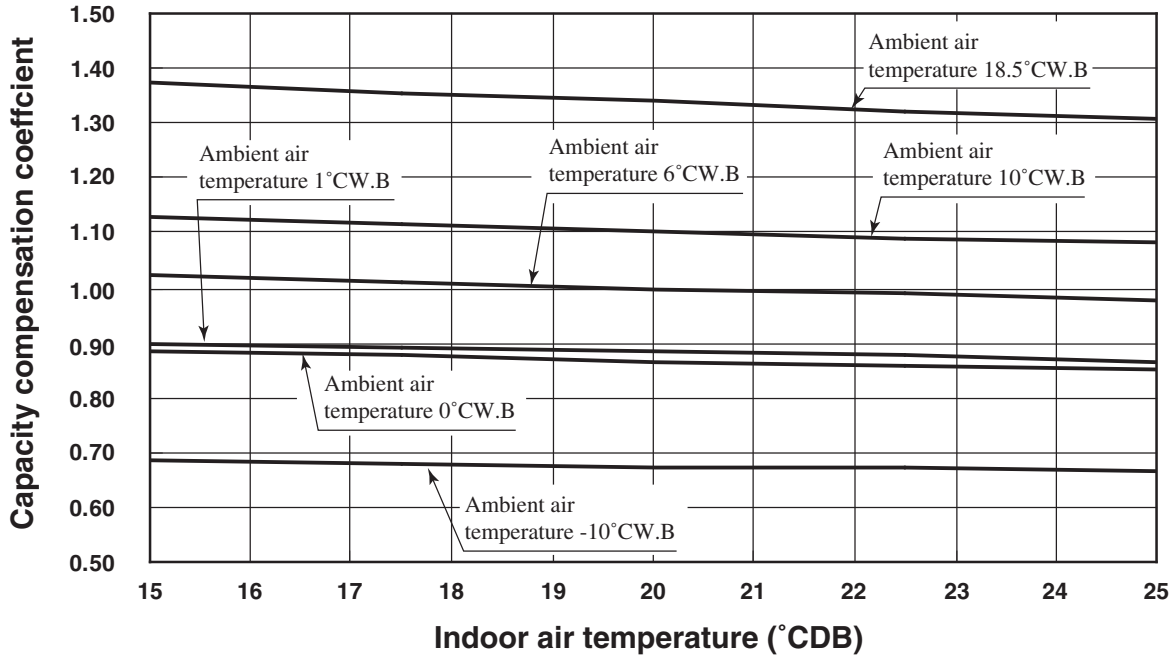


3) Models 802, 1002

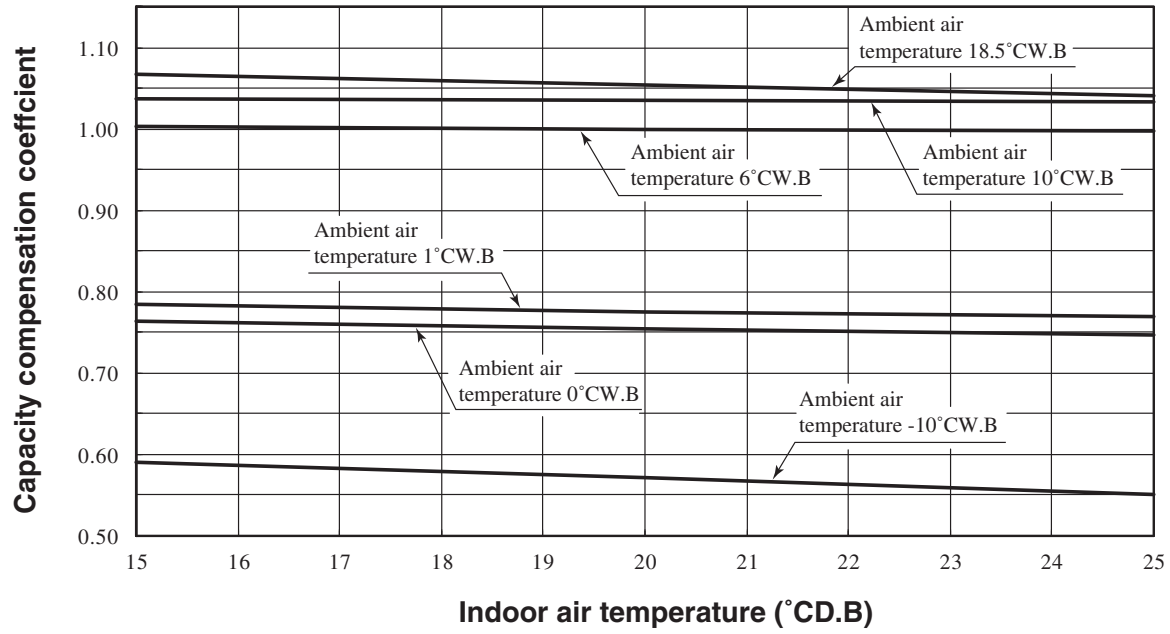


(b) Heating

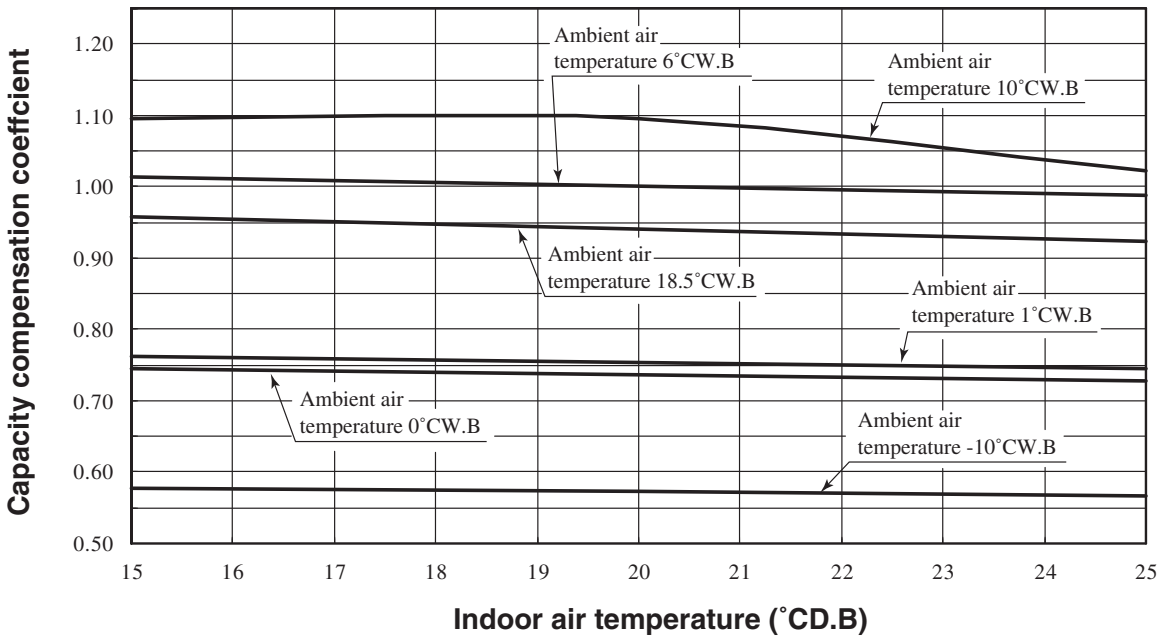
1) Model 302



2) Models 402~602



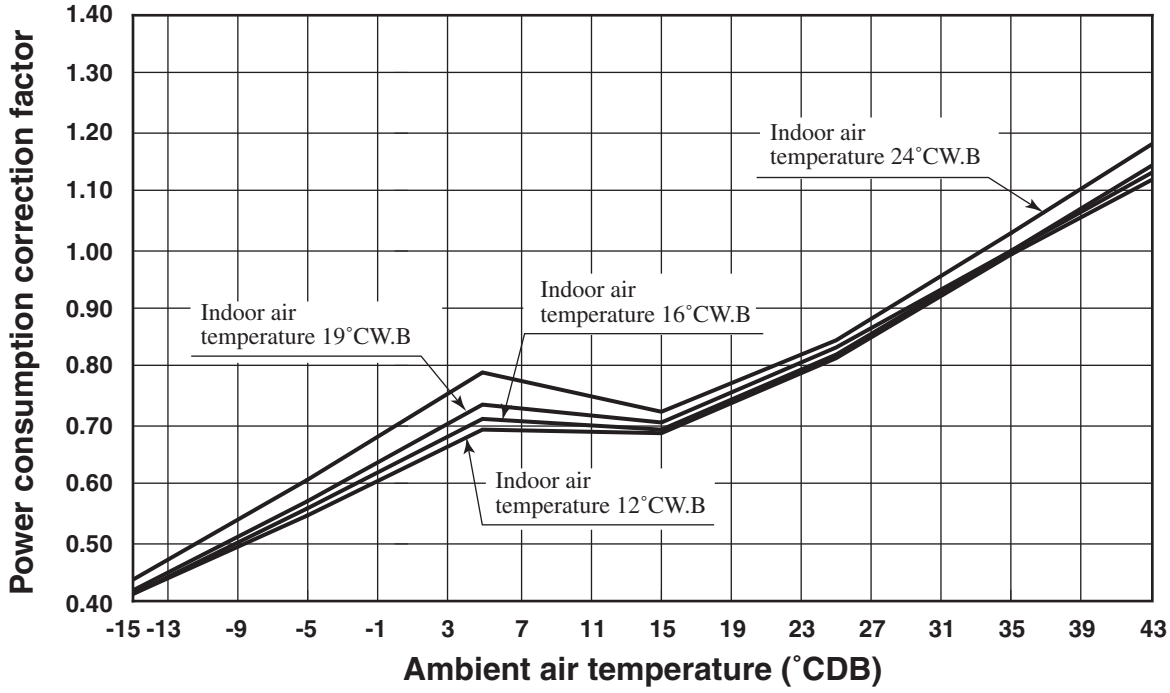
3) Models 802, 1002



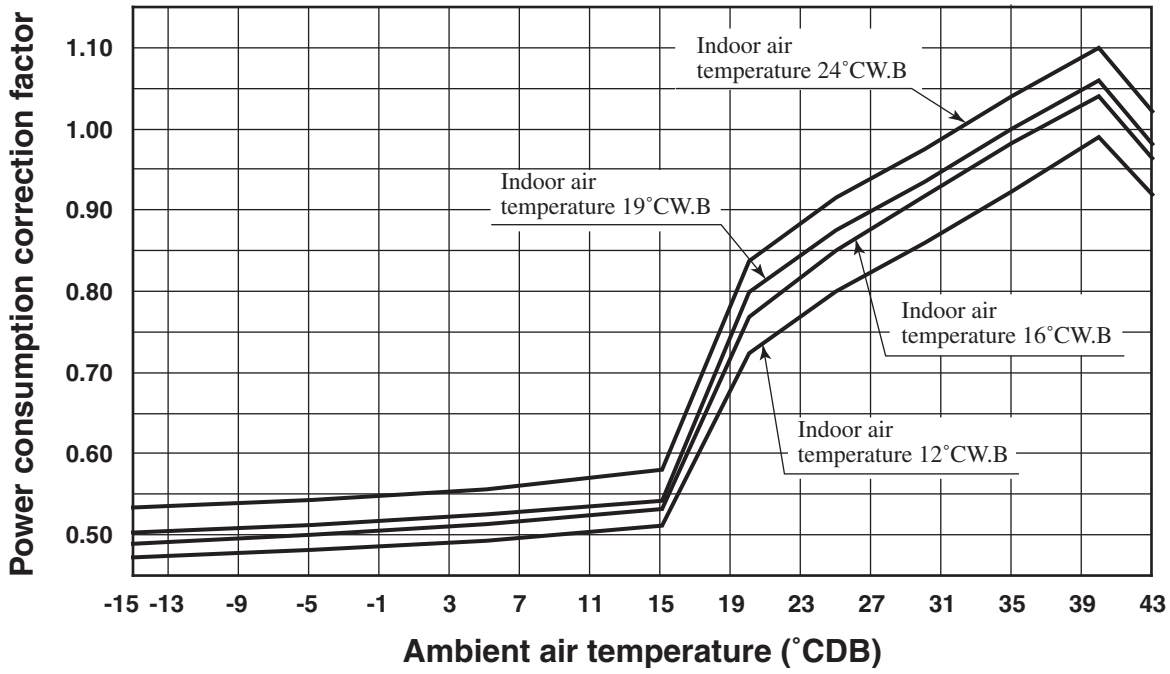
(2) Power consumption correction factor

(a) Cooling

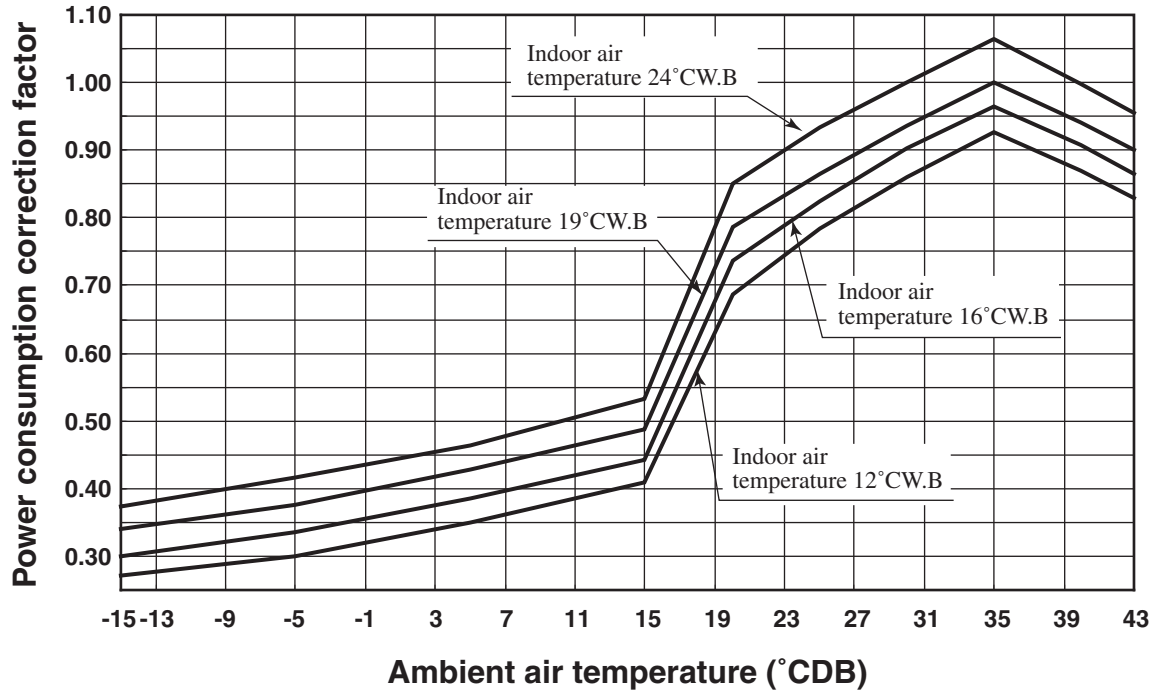
1) Model 302



2) Models 402~602

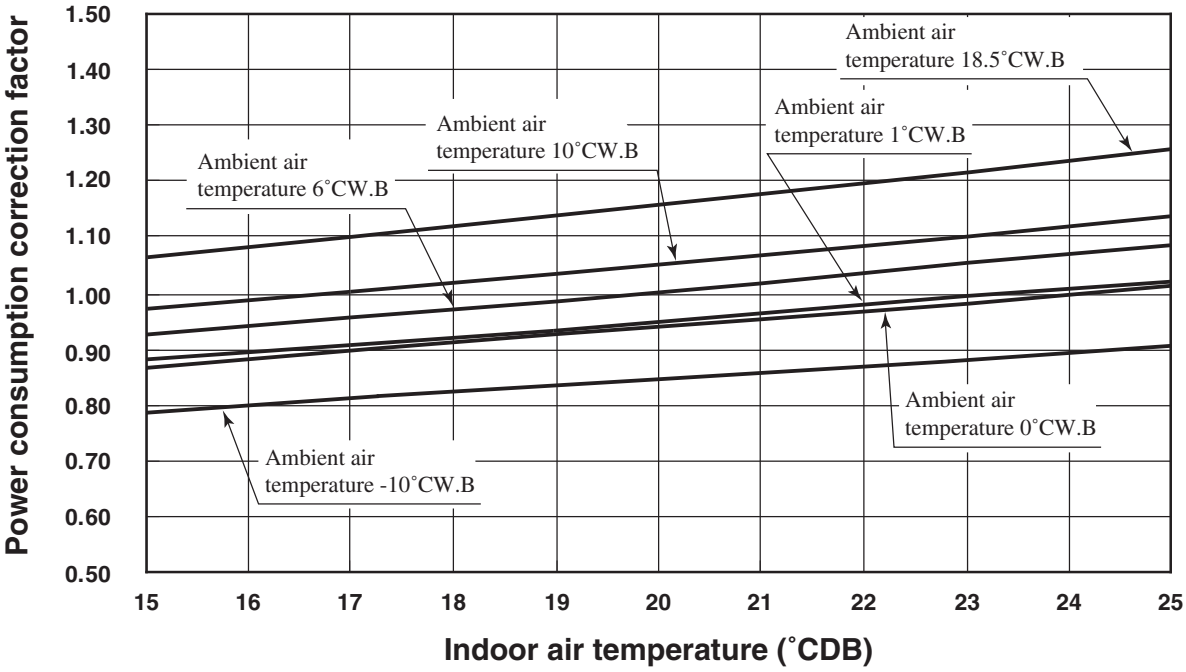


3) Models 802,1002

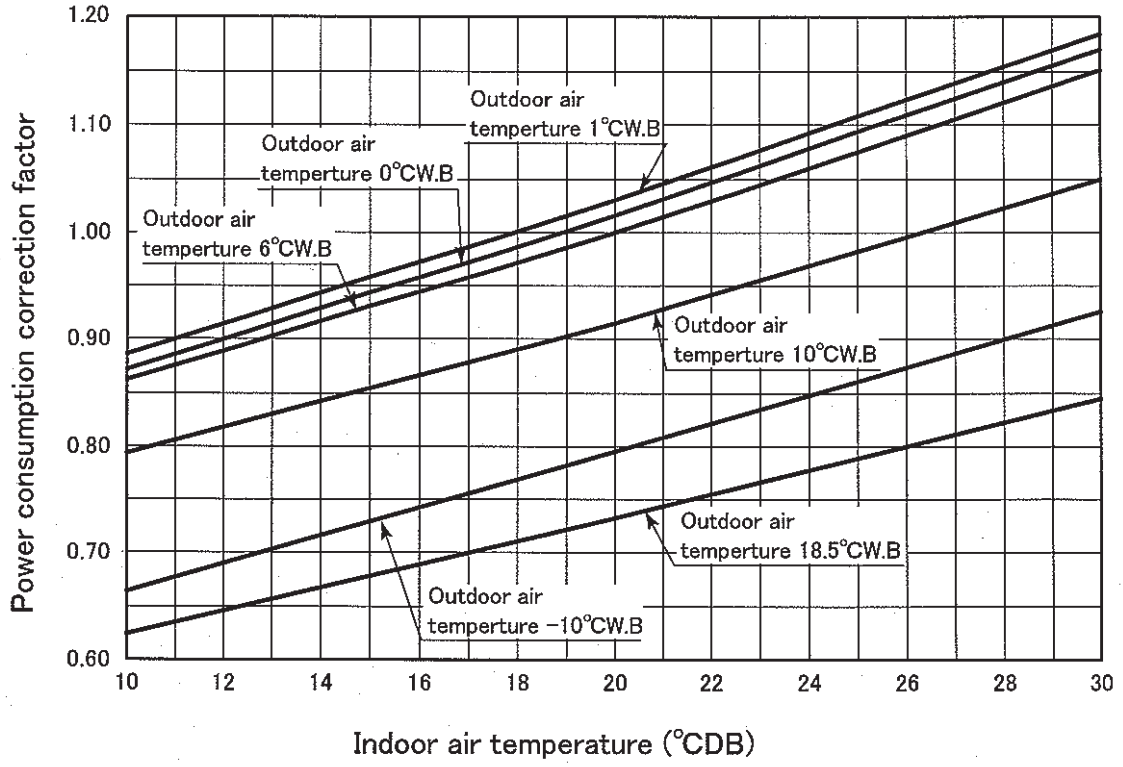


(b) Heating

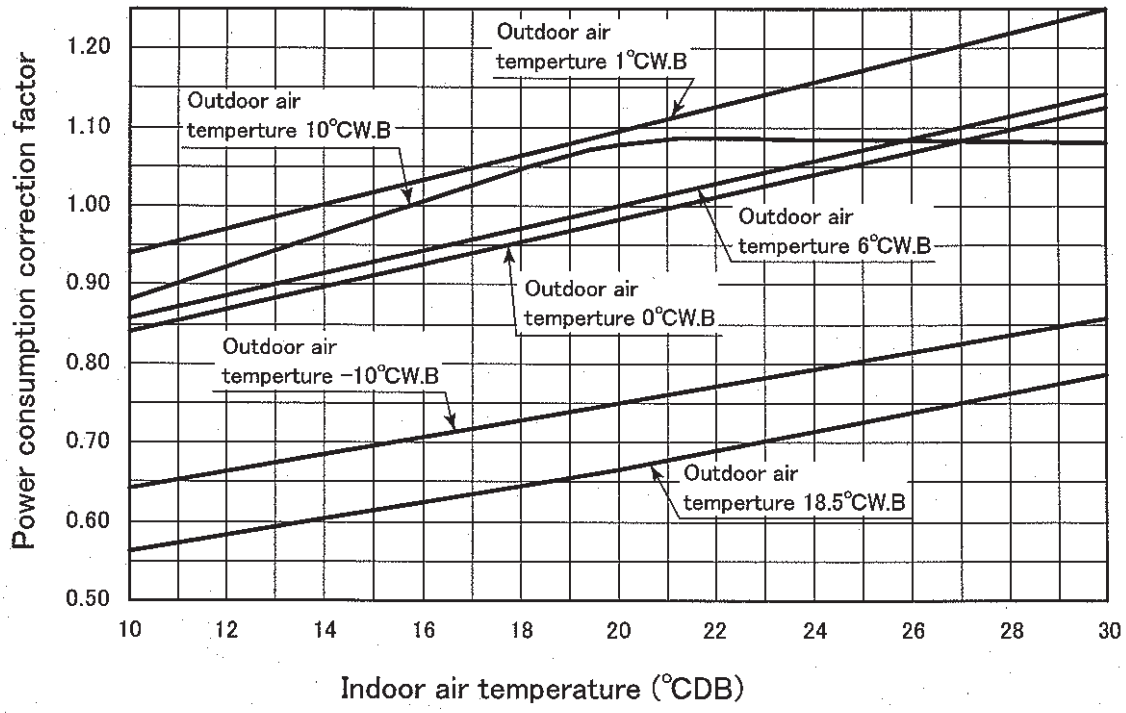
1) Model 302



b) Models 402～602



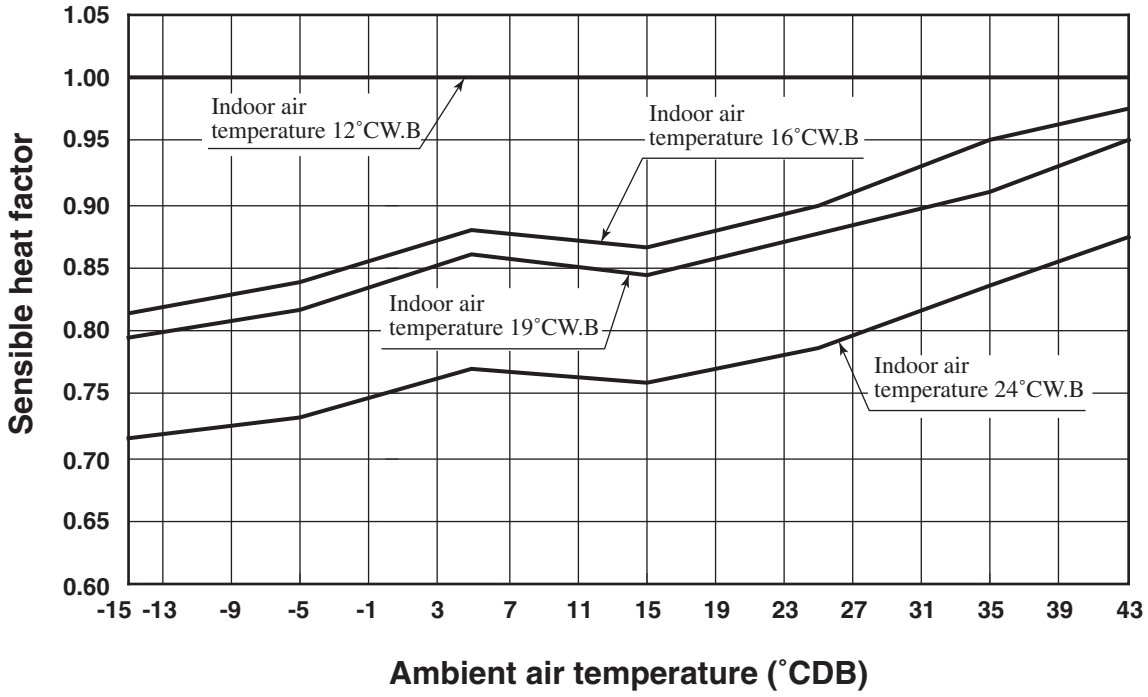
c) Models 802,1002



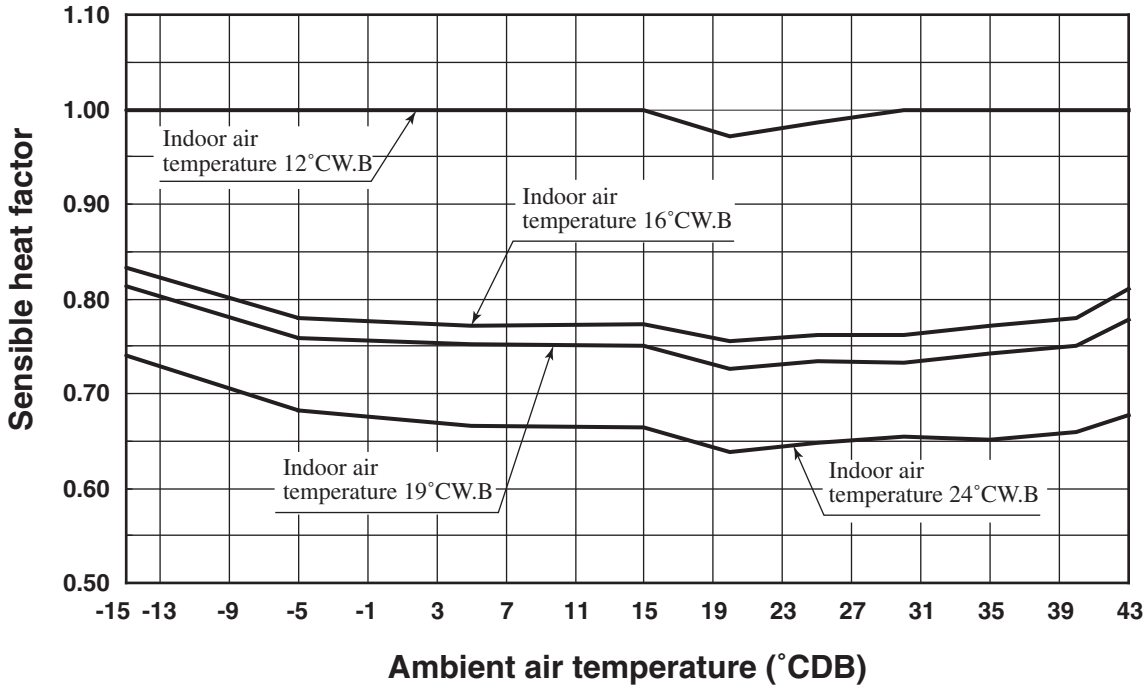
(3) Sensible heat factor

(a) Cooling

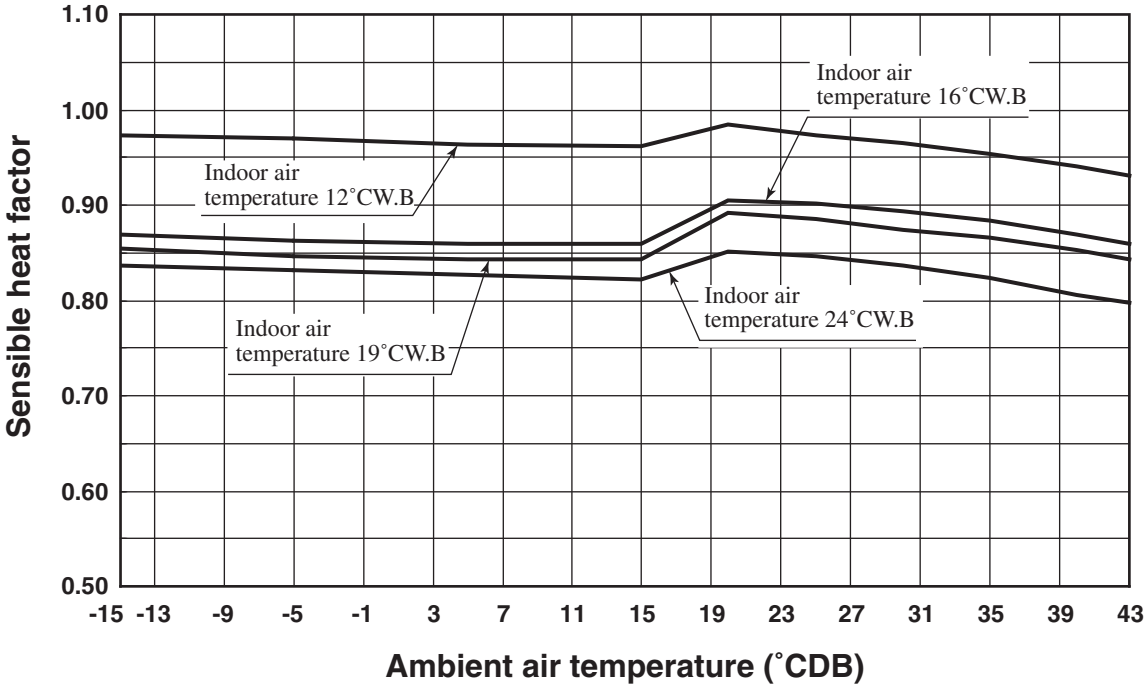
1) Model 302



2) Models 402~602



3) Models 802, 1002



(3) Correction of cooling and heating capacity in relation to air flow rate control (fan speed)
Coefficient: 1.00 at High, 0.97 at Middle, 0.95 at Low

(4) Correction of cooling and heating capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling and heating capacity in relation to the one way equivalent piping length between the indoor and outdoor units.

(i) Models 151~251

Equivalent piping length(1) m		7.5	10	15	20	25	30	35	40	45	50	55
Heating		1.0	0.995	0.992	0.990	0.987	0.984	0.981	0.978	0.975	0.972	0.970
Cooling	151 model	1.0	0.997	0.991	0.985	0.980	0.974	0.968	0.962	0.956	—	—
	201 model	1.0	0.996	0.989	0.981	0.973	0.966	0.958	0.951	0.943	—	—
	251 model	1.0	0.995	0.986	0.977	0.967	0.958	0.948	0.939	0.930	—	—

Note (1) Calculate the equivalent length using the following formula.
However, install the piping so that the equivalent length is within +5 m of the piping distance limit (actual length) for each respective piping system.

- Equivalent length = Actual length + (equivalent length of bends x number of bends in the piping)
  Equivalent length for 1 bend

Gas pipe diameter (mm)	ϕ12.7	ϕ15.88
Bend equivalent length	0.20	0.25

(ii) Models 302 ~ 602

- **Ambient air temperature 5°C or more**

Equivalent piping length(1) (m)			7.5	10	15	20	25	30	35	40	45	50	55
Heating			1	1	1	1	1	0.998	0.998	0.993	0.993	0.988	0.988
Cooling	302 model	ϕ15.88	1	0.996	0.989	0.982	0.975	0.968	0.961	0.954	0.947	0.940	0.933
	402 model		1	0.991	0.978	0.964	0.951	0.937	0.924	0.910	0.897	0.883	0.870
	502 model		1	0.986	0.968	0.950	0.932	0.914	0.896	0.878	0.860	0.842	0.824
	602 model		1	0.985	0.966	0.946	0.927	0.907	0.888	0.868	0.849	0.829	0.810
	302 model	ϕ19.05	1.008	1.006	1.003	1	0.997	0.994	0.991	0.988	0.985	0.982	0.979
	402 model		1.016	1.013	1.007	1.002	0.996	0.991	0.985	0.980	0.974	0.969	0.963
	502 model		1.022	1.018	1.009	1.001	0.992	0.984	0.975	0.967	0.958	0.950	0.941
	602 model		1.026	1.021	1.011	1.002	0.992	0.983	0.973	0.964	0.954	0.945	0.935

- **Ambient air temperature -5°C**

Equivalent piping length(1) (m)			7.5	10	15	20	25	30	35	40	45	50	55
Heating			1	1	1	1	1	0.998	0.998	0.993	0.993	0.988	0.988
Cooling	302 model	ϕ15.88	0.800	0.793	0.779	0.765	0.751	0.738	0.724	0.710	0.696	0.682	0.669
	402 model		1	0.987	0.963	0.938	0.914	0.890	0.866	0.841	0.817	0.793	0.769
	502 model		1	0.983	0.954	0.926	0.897	0.868	0.839	0.810	0.781	0.752	0.724
	602 model		1	0.982	0.952	0.921	0.891	0.861	0.830	0.800	0.769	0.739	0.709
	302 model	ϕ19.05	0.806	0.798	0.786	0.774	0.762	0.750	0.738	0.727	0.715	0.703	0.691
	402 model		1.016	1.008	0.992	0.975	0.959	0.943	0.927	0.911	0.895	0.879	0.863
	502 model		1.022	1.013	0.994	0.974	0.955	0.936	0.917	0.898	0.879	0.860	0.841
	602 model		1.026	1.016	0.996	0.975	0.955	0.935	0.915	0.895	0.875	0.855	0.835

- **Ambient air temperature -15°C**

Equivalent piping length(1) (m)			7.5	10	15	20	25	30	35	40	45	50	55
Heating			1	1	1	1	1	0.998	0.998	0.933	0.993	0.988	0.988
Cooling	302 model	ϕ15.88	0.600	0.590	0.569	0.549	0.528	0.507	0.487	0.466	0.446	0.425	0.404
	402 model		1	0.983	0.948	0.913	0.878	0.843	0.808	0.773	0.738	0.703	0.668
	502 model		1	0.980	0.940	0.901	0.861	0.821	0.782	0.742	0.702	0.662	0.623
	602 model		1	0.979	0.938	0.897	0.856	0.814	0.773	0.732	0.690	0.649	0.608
	302 model	ϕ19.05	0.605	0.590	0.569	0.548	0.527	0.507	0.486	0.465	0.444	0.424	0.403
	402 model		1.016	1.002	0.976	0.949	0.922	0.896	0.869	0.842	0.816	0.789	0.762
	502 model		1.022	1.007	0.978	0.948	0.918	0.889	0.859	0.829	0.800	0.770	0.740
	602 model		1.026	1.010	0.980	0.949	0.918	0.888	0.857	0.826	0.796	0.765	0.734

Note (1) Calculate the equivalent length using the following formula.
However, install the piping so that the piping length is within +5 m of the limit length (actual length) for the respective types.
• Equivalent Length = Actual Length + (Equivalent bend length x number of bends in the piping.)
Equivalent length per bend.

Gas Pipe Diameter (mm)	ϕ12.7	ϕ15.88	ϕ19.05
Equivalent Bend Length	0.20	0.25	0.30

(iii) Models 802, 1002

- **Ambient air temperature 5°C or more**

Equivalent piping length(1) (m)			7.5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
Heating			1	0.998	0.995	0.991	0.988	0.984	0.981	0.977	0.974	0.970	0.967	0.963	0.960	0.956	0.953
Cooling	802 model	ϕ25.4	1	0.998	0.995	0.991	0.988	0.984	0.981	0.977	0.974	0.970	0.967	0.963	0.960	0.956	0.953
	1002 model		1	0.996	0.990	0.984	0.978	0.972	0.966	0.960	0.954	0.948	0.942	0.936	0.930	0.924	0.918
	802 model	ϕ22.22	0.993	0.990	0.984	0.977	0.971	0.964	0.958	–	–	–	–	–	–	–	–
	1002 model		0.988	0.983	0.973	0.963	0.953	0.943	0.933	–	–	–	–	–	–	–	–
	802 model	ϕ28.58	1.003	1.002	1	0.998	0.996	0.994	0.992	0.990	0.988	0.986	0.984	0.982	0.980	0.978	0.976
	1002 model		1.004	1.003	0.999	0.996	0.992	0.989	0.985	0.982	0.978	0.975	0.971	0.968	0.964	0.961	0.957

● **Ambient air temperature -5°C**

Equivalent piping length(1) (m)			7.5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
Heating			1	0.998	0.995	0.991	0.988	0.984	0.981	0.977	0.974	0.970	0.967	0.963	0.960	0.956	0.953
Cooling	802 model	ϕ25.4	1	0.993	0.979	0.965	0.950	0.936	0.922	0.908	0.894	0.880	0.866	0.852	0.838	0.824	0.810
	1002 model		1	0.991	0.974	0.958	0.941	0.925	0.908	0.891	0.875	0.858	0.841	0.825	0.808	0.791	0.775
	802 model	ϕ22.22	0.993	0.985	0.968	0.951	0.934	0.917	0.899	–	–	–	–	–	–	–	–
	1002 model		0.988	0.978	0.957	0.937	0.916	0.895	0.875	–	–	–	–	–	–	–	–
	802 model	ϕ28.58	1.003	0.996	0.984	0.971	0.958	0.946	0.933	0.921	0.908	0.896	0.883	0.870	0.858	0.845	0.833
	1002 model		1.004	0.997	0.983	0.969	0.955	0.941	0.927	0.913	0.899	0.885	0.870	0.856	0.842	0.828	0.814

● **Ambient air temperature -15°C**

Equivalent piping length(1) (m)			7.5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
Heating			1	0.998	0.995	0.991	0.988	0.984	0.981	0.977	0.974	0.970	0.967	0.963	0.960	0.956	0.953
Cooling	802 model	ϕ25.4	1	0.987	0.963	0.938	0.913	0.889	0.864	0.839	0.815	0.790	0.765	0.741	0.716	0.691	0.667
	1002 model		1	0.986	0.959	0.932	0.904	0.877	0.850	0.823	0.795	0.768	0.741	0.713	0.686	0.659	0.631
	802 model	ϕ22.22	0.993	0.980	0.952	0.924	0.897	0.869	0.841	–	–	–	–	–	–	–	–
	1002 model		0.988	0.973	0.941	0.910	0.879	0.848	0.817	–	–	–	–	–	–	–	–
	802 model	ϕ28.58	1.003	0.991	0.968	0.945	0.921	0.898	0.875	0.852	0.829	0.806	0.782	0.759	0.736	0.713	0.690
	1002 model		1.004	0.992	0.967	0.943	0.918	0.893	0.869	0.844	0.819	0.795	0.770	0.745	0.720	0.696	0.671

Note (1) Calculate the equivalent length using the following formula.
However, install the piping so that the piping length is within +5 m of the limit length (actual length) for the respective types.
• Equivalent Length = Actual Length + (Equivalent bend length x number of bends in the piping.)

Equivalent length per bend.

Gas Pipe Diameter (mm)	ϕ15.88	ϕ22.22	ϕ25.4	ϕ28.58
Equivalent Bend Length	0.25	0.35	0.40	0.45

(5) When the outdoor unit is located below indoor units in cooling mode, or when the outdoor unit is located above indoor units in heating mode, the correction coefficient mentioned in the below table should be subtracted from the value in the above table.

Height difference between the indoor unit and outdoor unit in the vertical height difference	**5m**	**10m**	**15m**	**20m**	**25m**	**30m**
Adjustment coefficient	0.01	0.02	0.03	0.04	0.05	0.06

Piping length limitations

Item \ Model	151~251	302, 402, 502, 602	802, 1002
Max. one way piping length	40m	50m	70m*
Max. vertical height difference	Outdoor unit is higher 30m Outdoor unit is lower 15m		

Notes (1) Values in the table indicate the one way piping length between the indoor and outdoor units.
(2) When ϕ22.22 gas pipe is applied to 802 and 1002 (*mark), maximum one way length is limited to 30m.

How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model FDUMVA402HEN2R with the air flow “High”, the piping length of 15m, the outdoor unit located 5m lower than the indoor unit, indoor wet-bulb temperature at 19.0 ˚C and outdoor dry-bulb temperature 35 ˚C is

Net cooling capacity = 10.0 × 1.00 × (0.978(1) - 0.01) × 1.0 ≈ 9.7 kW

- 10.0 : FDUMVA402HEN2R
- 1.00 : Air flow “High”
- (0.978(1) - 0.01) : Length 15m. Height difference 5m
- 1.0 : Factor by air temperatures

Note (1) The above conditions show calculations for when the outside air temperature is 5°C or higher and the gas pipe size is ϕ15.88.
The capacity correction coefficient will differ depending on the proportions between the outside air temperature and the gas pipe size.

1.2.8 Characteristics of fan

(2) Satellite ducted type (FDUM)

• External static pressure table

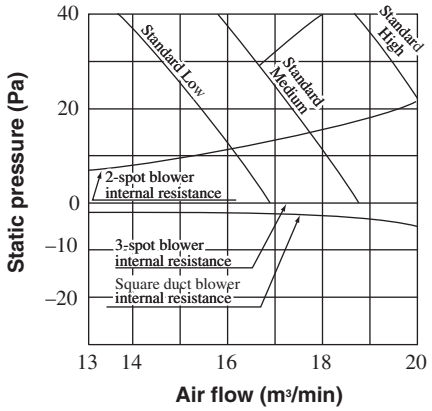
Unit : Pa

Model \ Duct specs. / Air flow (m³/min)		1 spot closing		Standard		Square duct	
		Stan-dard	High (4) speed	Stan-dard	High (4) speed	Stan-dard	High (1) speed
FDUMA202	14	-	-	50	85	50	90
FDUMA252	18	35	70	50	85	55	90
FDUMA302	20	30	65	50	85	55	90
FDUMA402	28	50	80	60	90	65	95
FDUMA502,602	34	50	75	60	85	65	95

Notes (1) 1 spot closing: Round duct flange at center is removed and shield with a special panel (option).
(2) Standard: ø200 duct are installed at all blowout holes.
(3) Square duct: All round ducts are removed and replaced with special square duct flanges (option).
(4) When using the high speed setting, turn the dip switch SW9-4 on the indoor PCB to the ON position.
(When setting from the remote controller, select "Hi CEILNG 1")

How to interpret the blower characteristics table

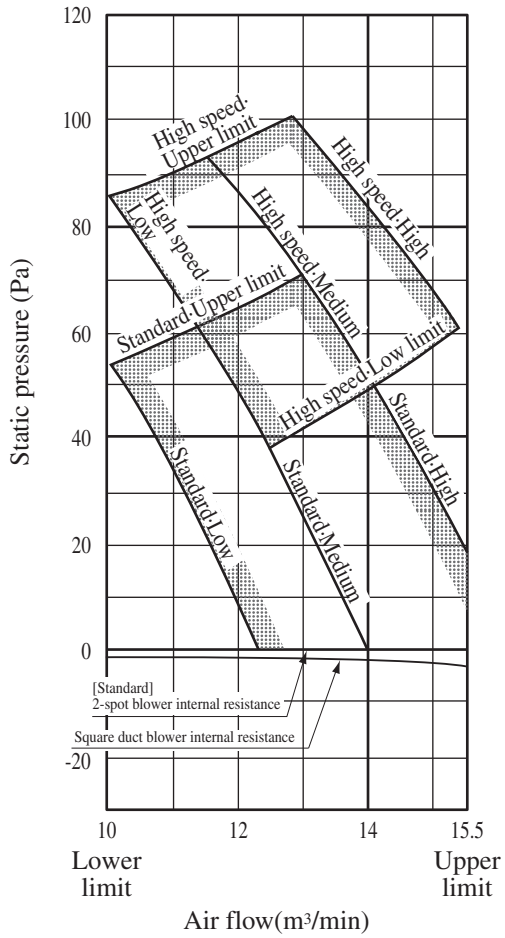
Example : Case of FDUMA252R



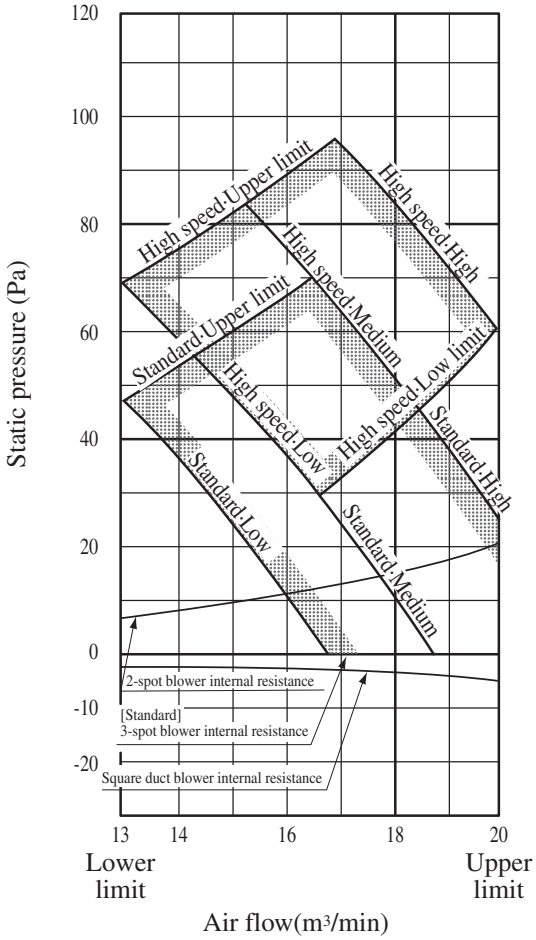
① 2-spot blowout.....
Internal resistance increases more than the standard 3-spot blowout.Approx. 14Pa at 17m³/min

② Square duct blowout.....
Internal resistance decreases more than the standard round duct (ø200 3-spot). 3Pa at 17m³/min. (External static pressure increases in reverse.)

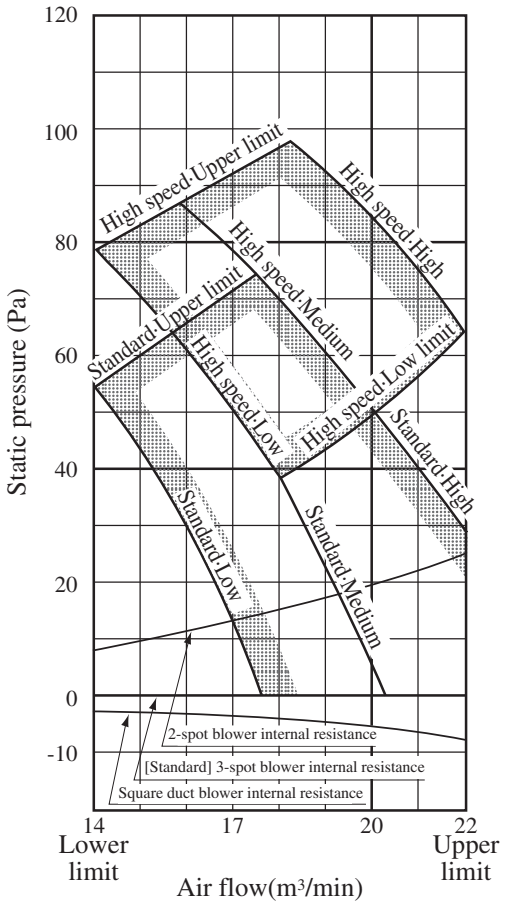
FDUMA202R



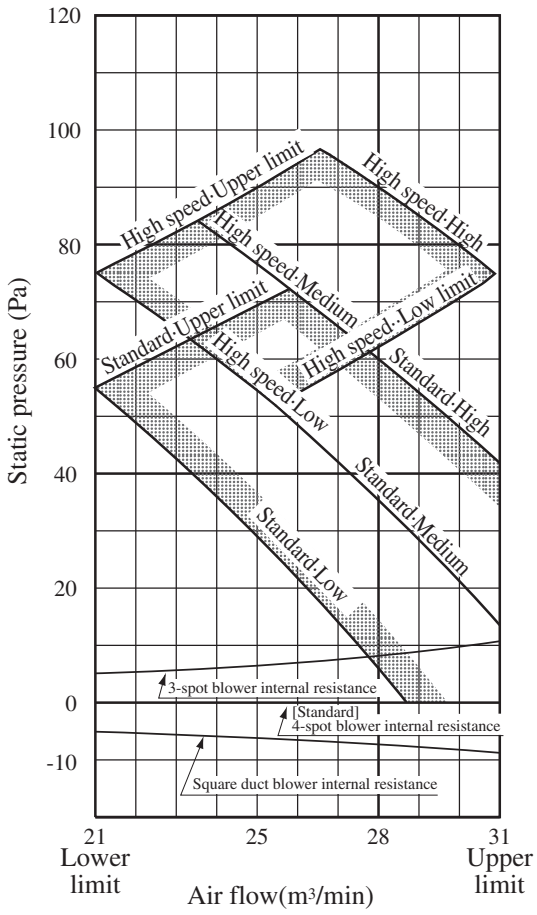
FDUMA252R



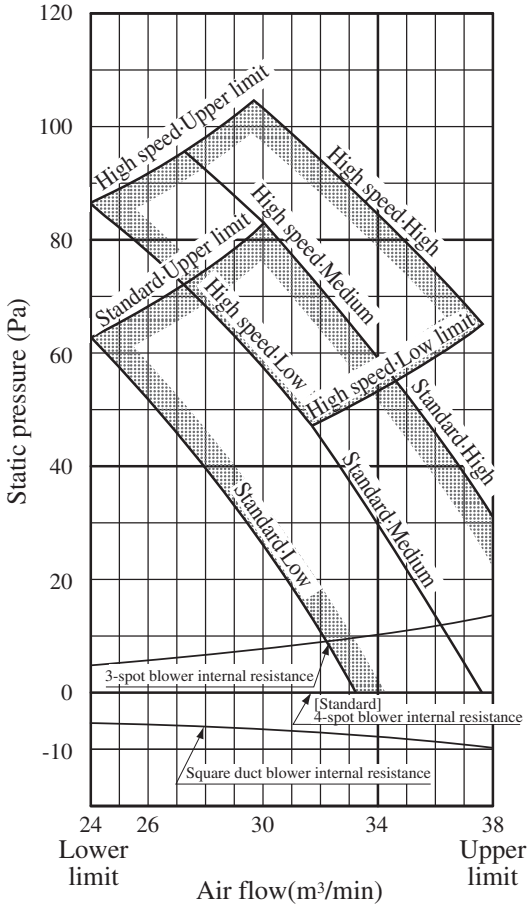
FDUMA302R



FDUMA402R



FDUMA502R, 602R

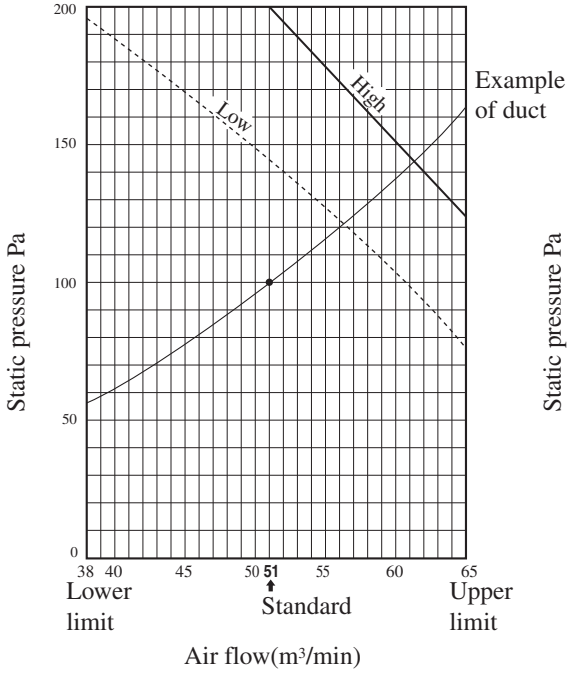


(2) High static pressure ducted type (FDU)

(a) Standard (Factory Settings)

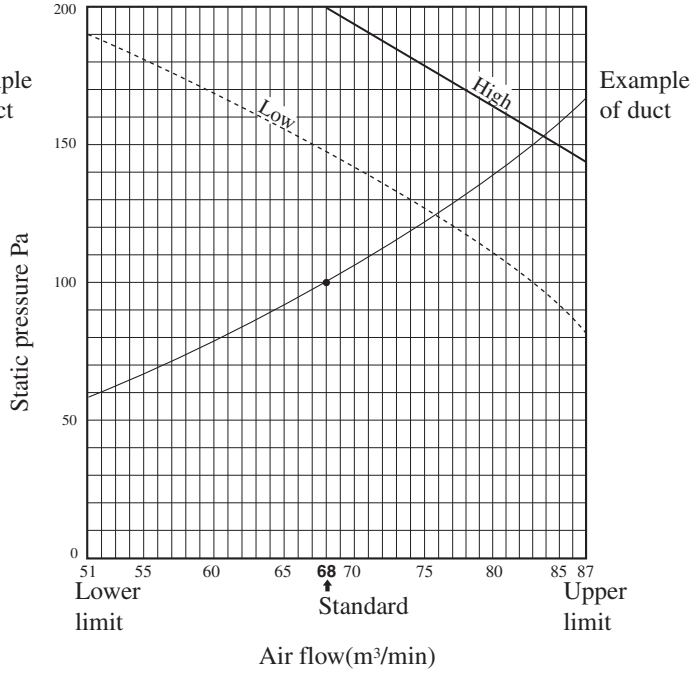
Model FDUA801R

• Condition of standard rating
rated air volume: 100Pa



Model FDUA1001R

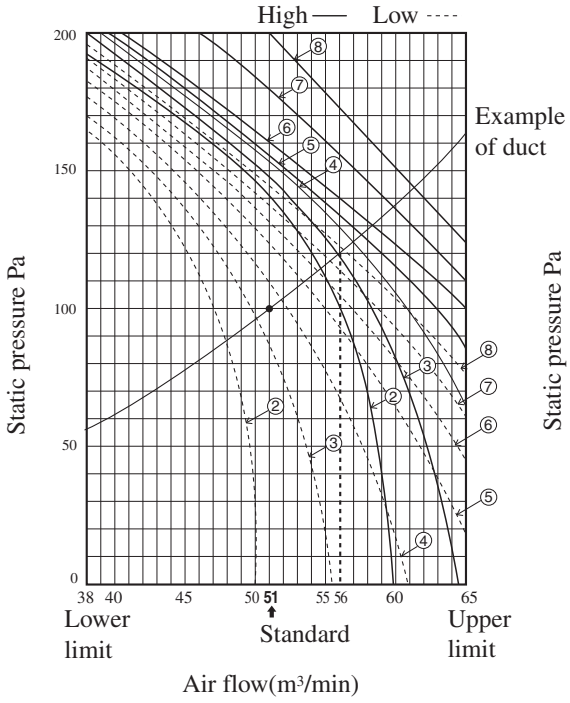
• Condition of standard rating
rated air volume: 100Pa



(b) When the fan controller kit is used (option)

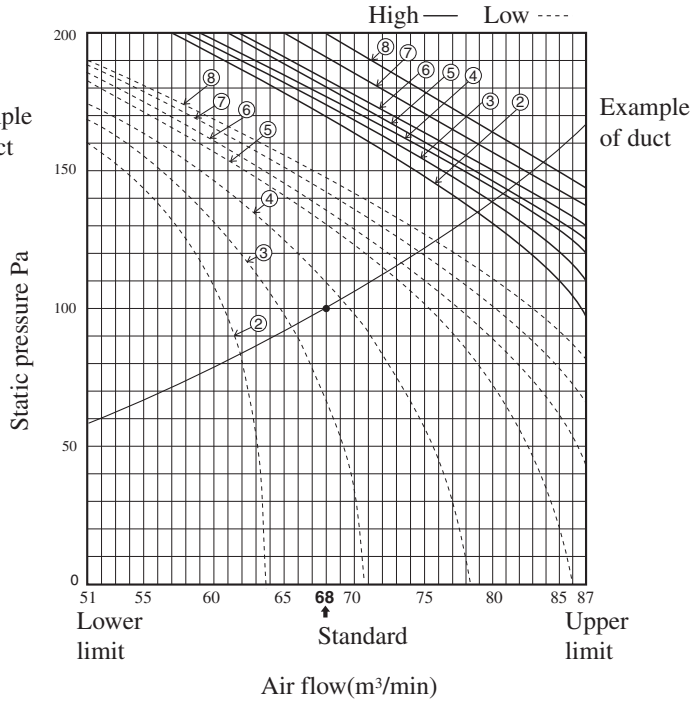
Model FDUA801R

• Condition of standard rating
rated air volume: 100Pa



Model FDUA1001R

• Condition of standard rating
rated air volume: 100Pa



1.2.9 Noise level

Notes (1) The data are based on the following conditions.
Ambient air temperature: Indoor unit 27˚C DB, 19˚C WB. Outdoor unit 35˚C DB.
(2) The data in the chart are measured in an anechoic room.
(3) The noise levels measured in the field are usually higher than the data because of reflection.
(4) Noise levels for the FDTC, FDT, FDEN and FDKN series show the noise level when in the Powerful mode.

(1) Indoor unit

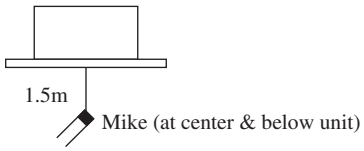
(a) Ceiling recessed compact type (FDTC)

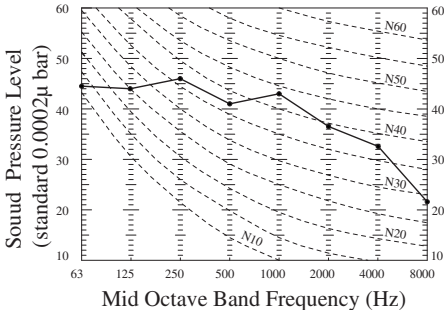
Models FDTCA151R, 201R

Noise level 46 dB (A) at HIGH
42 dB (A) at MEDIUM
38 dB (A) at LOW

Measured based on JIS B 8616

Mike position as pen drawing

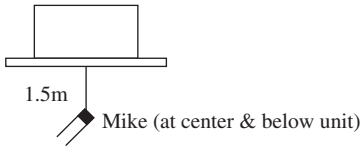




(b) Ceiling recessed type (FDT)

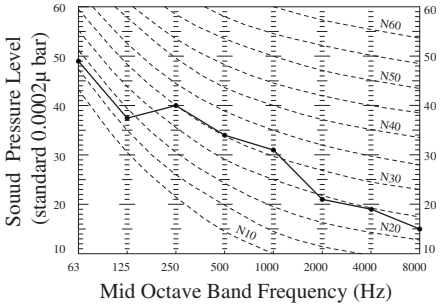
Measured based on JIS B 8616

Mike position as pen drawing



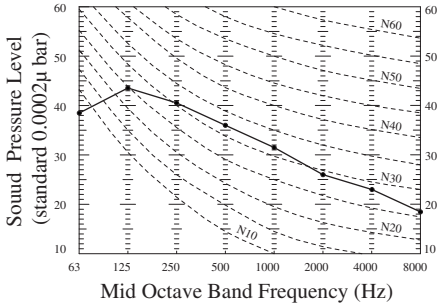
Models FDTA151R, 201R

Noise level 36 dB (A) at HIGH
33 dB (A) at MEDIUM
32 dB (A) at LOW



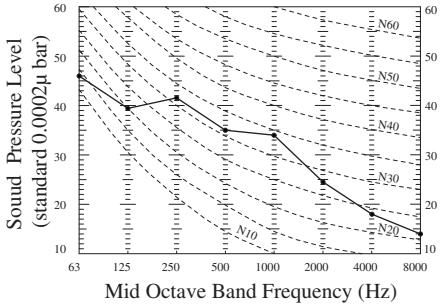
Model FDTA251R

Noise level 38 dB (A) at HIGH
35 dB (A) at MEDIUM
33 dB (A) at LOW



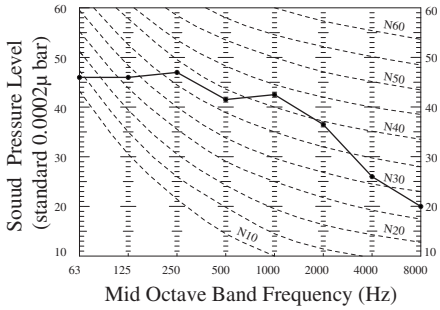
Model FDTA301R

Noise level 38 dB (A) at HIGH
35 dB (A) at MEDIUM
33 dB (A) at LOW



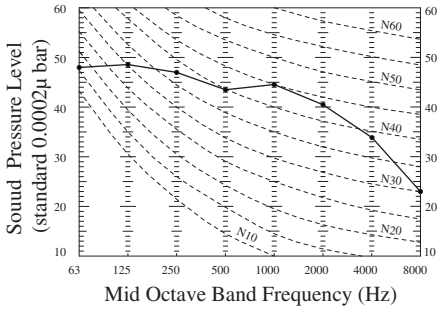
Model FDTA401R

Noise level 46 dB (A) at HIGH
43 dB (A) at MEDIUM
41 dB (A) at LOW



Models FDTA501R, 601R

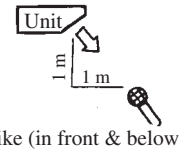
Noise level 48 dB (A) at HIGH
45 dB (A) at MEDIUM
43 dB (A) at LOW



(c) Ceiling suspended type (FDEN)

Measured based on JIS B 8616

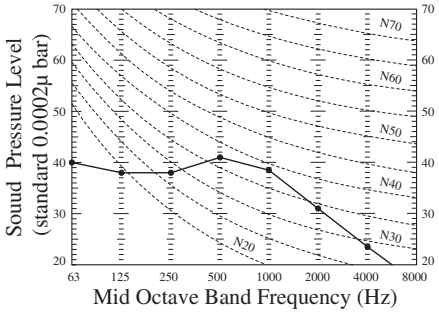
Mike position as pen drawing



Mike (in front & below unit)

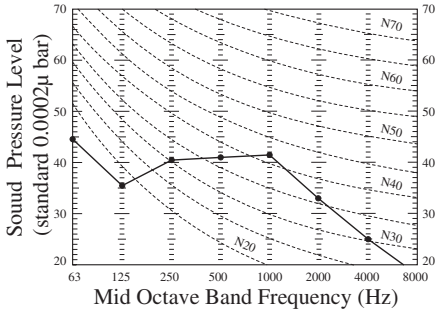
Models FDENA151R, 201R

Noise level 42 dB (A) at HIGH
39 dB (A) at MEDIUM
38 dB (A) at LOW



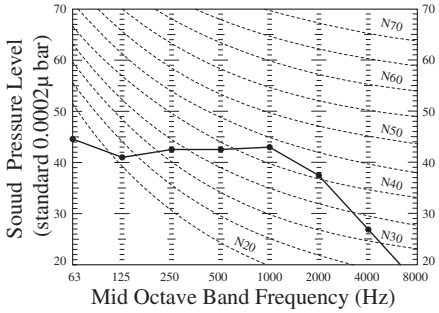
Models FDENA251R, 301R

Noise level 44 dB (A) at HIGH
41 dB (A) at MEDIUM
39 dB (A) at LOW



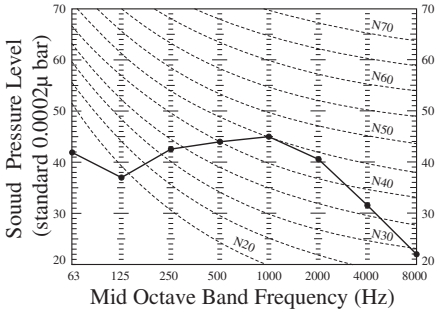
Model FDENA401R

Noise level 46 dB (A) at HIGH
44 dB (A) at MEDIUM
41 dB (A) at LOW



Models FDENA501R, 601R

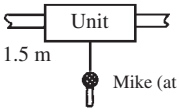
Noise level 48 dB (A) at HIGH
46 dB (A) at MEDIUM
44 dB (A) at LOW



(d) Satellite ducted type (FDUM)

Measured based on JIS B 8616

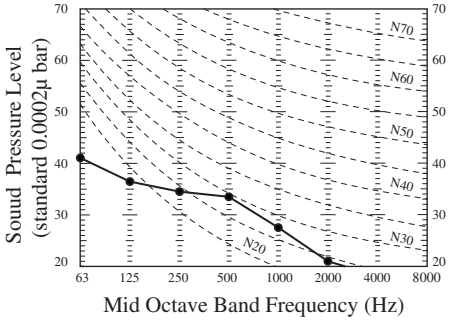
Mike position as pen drawing



Mike (at center & below unit)

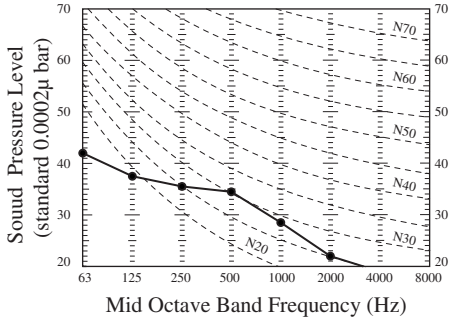
Models FDUMA202, 252R

Noise level 34 dB (A) at HIGH
31 dB (A) at MEDIUM
28 dB (A) at LOW



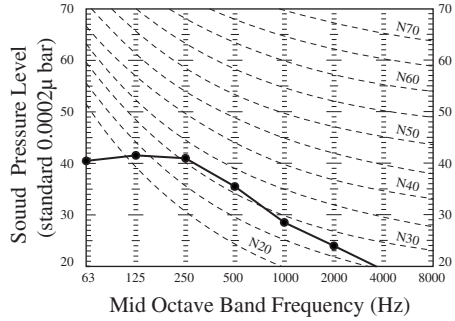
Model FDUMA302R

Noise level 35 dB (A) at HIGH
32 dB (A) at MEDIUM
29 dB (A) at LOW



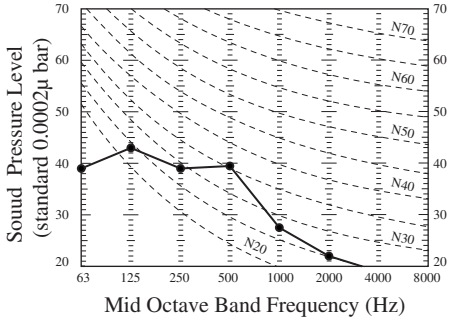
Model FDUMA402R

Noise level 37 dB (A) at HIGH
35 dB (A) at MEDIUM
32 dB (A) at LOW



Models FDUMA502R, 602R

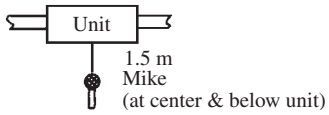
Noise level 38 dB (A) at HIGH
36 dB (A) at MEDIUM
33 dB (A) at LOW



(e) High static pressure duct type (FDU)

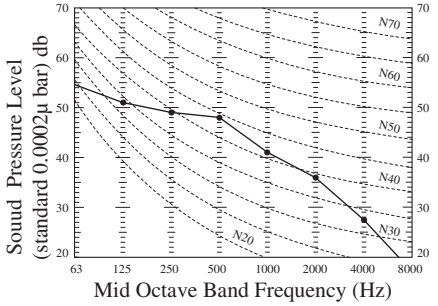
Measured based on JIS B 8616

Mike position as pen drawing



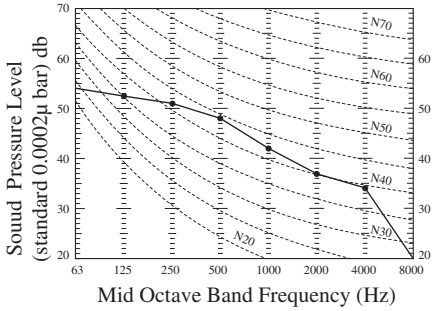
Model FDUA801R

Noise level 48dB (A)



Model FDUA1001R

Noise level 49dB (A)



● **Power level**

(Measurement conditions: JIS-B8616, measurement location: reverberation chamber)

(Unit: dB)

Model	Air supply side	Air return side
FDUA801R	74	63
FDUA1001R	75	64

Note (1) Concerning the power level, the values shown are for when the outdoor unit's static pressure is 200 Pa.

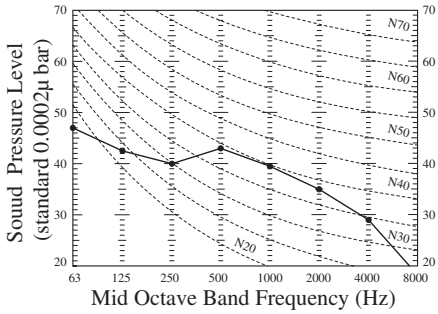
(f) Wall mounted type (FDKN)

Measured based on JIS B 8616

Mike position as pen drawing

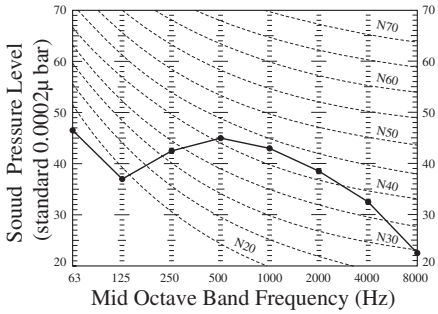
Model FDKNA151R

Noise level 44 dB (A) at HIGH
42 dB (A) at MEDIUM
40 dB (A) at LOW



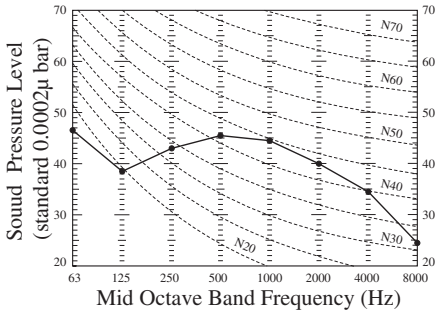
Model FDKNA201R

Noise level 47 dB (A) at HIGH
44 dB (A) at MEDIUM
41 dB (A) at LOW



Model FDKNA251R

Noise level 48 dB (A) at HIGH
45 dB (A) at MEDIUM
42 dB (A) at LOW



(2) Outdoor unit

Measured based on JIS B 8616

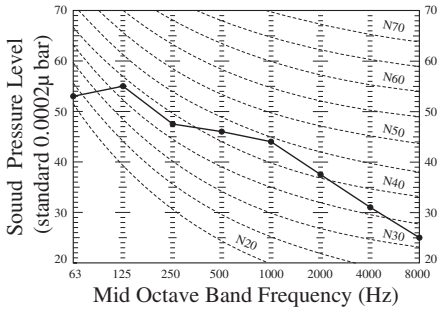
Mike position: at highest noise level in position as mentined below

Distance from front side 1m

Height 1m

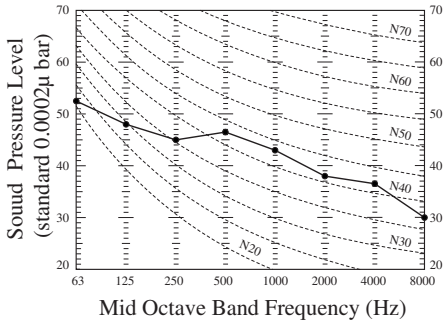
Models FDCVA151HENR, 201HENR, 251HENR

Noise level 48 dB (A)



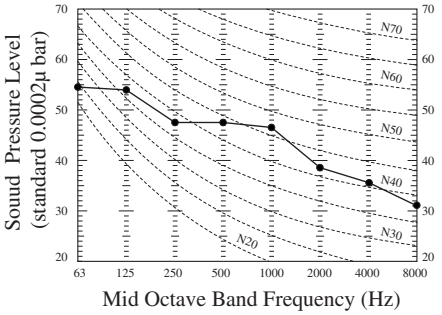
Model FDCVA302HENR

Noise level 48 dB (A)



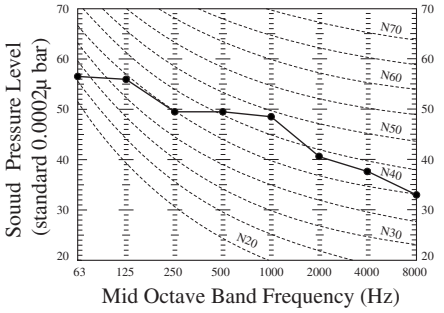
Model FDCV402HENAR 402HESAR

Noise level 50 dB (A)



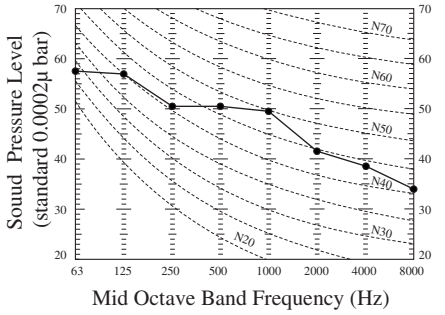
Model FDCV502HENAR 502HESAR

Noise level 52 dB (A)



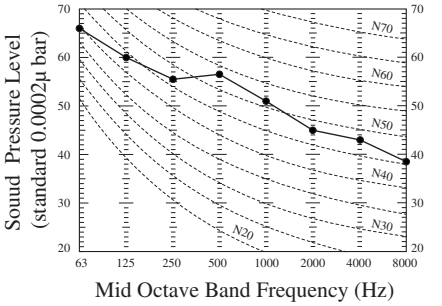
Model FDCVA602HENAR 602HESAR

Noise level 53 dB (A)



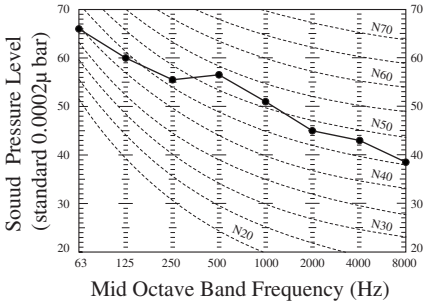
Model FDCVA802HESAR

Noise level 57 dB (A)

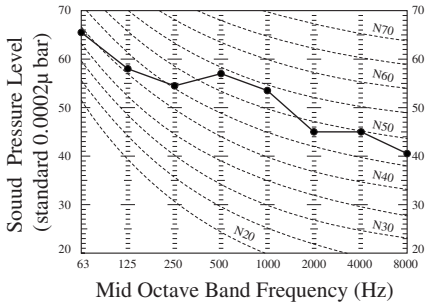


Model FDCVA1002HESAR

Cooling Noise level 57 dB (A)



Heating Noise level 58 dB (A)



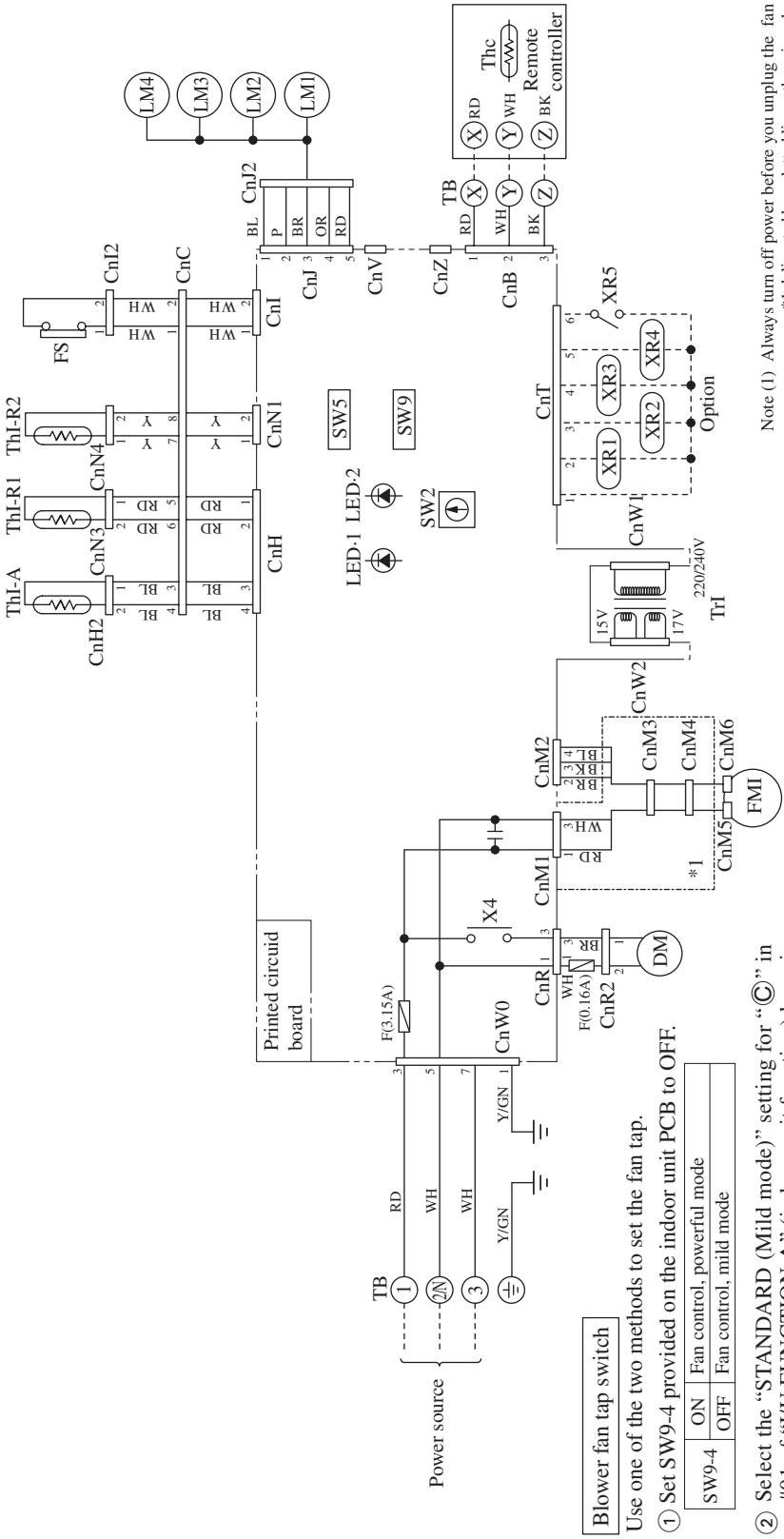
1.3 ELECTRICAL DATA

1.3.1 Electrical wiring

(1) Indoor unit

(a) Ceiling recessed compact type (FDTC)

Models All models



Note (1) Always turn off power before you unplug the fan motor connector shown in an area *1 delineated by a dotted line, otherwise a breakdown of the fan motor may result.

Color marks

Mark	Color	Mark	Color
BK	Black	**WH**	White
BL	Blue	**Y**	Yellow
BR	Brown	**P**	Pink
OR	Orange	**Y/GN**	Yellow/Green
RD	Red		

Blower fan tap switch

Use one of the two methods to set the fan tap.

① Set SW9-4 provided on the indoor unit PCB to OFF.

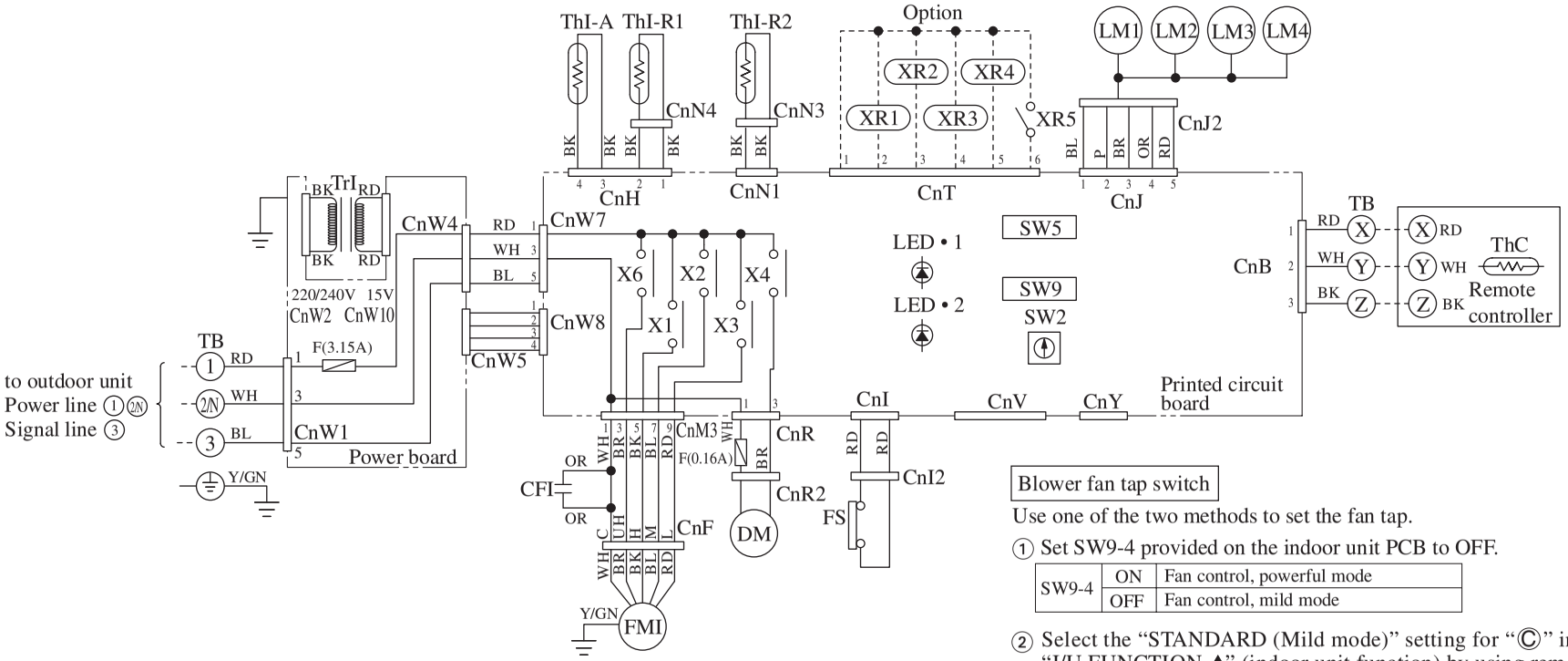
SW9-4		
	ON	Fan control, powerful mode
	OFF	Fan control, mild mode

② Select the "STANDARD (Mild mode)" setting for "Ⓒ" in #01 of "I/U FUNCTION ▲" (indoor unit function) by using remote controller function setting.

Function number Ⓐ	Function description Ⓑ	Setting Ⓒ
01	Hi CEILING SET	STANDARD (Mild mode)

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI	Fan motor	**SW2**	Remote controller communications address setting	**XR3**	Thermo ON output(DC12V output)
DM	Drain motor	**SW9-3**	Emergency operation	**XR4**	Inspection output(DC12V output)
FS	Float switch	**TrI**	Transformer	**XR5**	Remote operation input(volt-free contact)
LM1~4	Louver motor	**F**	Fuse	**X4**	Auxiliary relay(For DM)
ThI-A	Thermistor	**LED1**	Indication lamp(Red)	**TB**	Terminal block(○ mark)
ThI-R1	Thermistor	**LED2**	Indication lamp(Green)	**CnA~Z**	Connector(▭ mark)
ThI-R2	Thermistor	**XR1**	Operation output(DC12V output)	**■mark**	Closed-end connector
Thc	Thermistor	**XR2**	Heating output(DC12V output)		



Blower fan tap switch

Use one of the two methods to set the fan tap.

① Set SW9-4 provided on the indoor unit PCB to OFF.

SW9-4	ON	Fan control, powerful mode
	OFF	Fan control, mild mode

② Select the "STANDARD (Mild mode)" setting for "Ⓒ" in #01 of "I/U FUNCTION ▲" (indoor unit function) by using remote controller function setting.

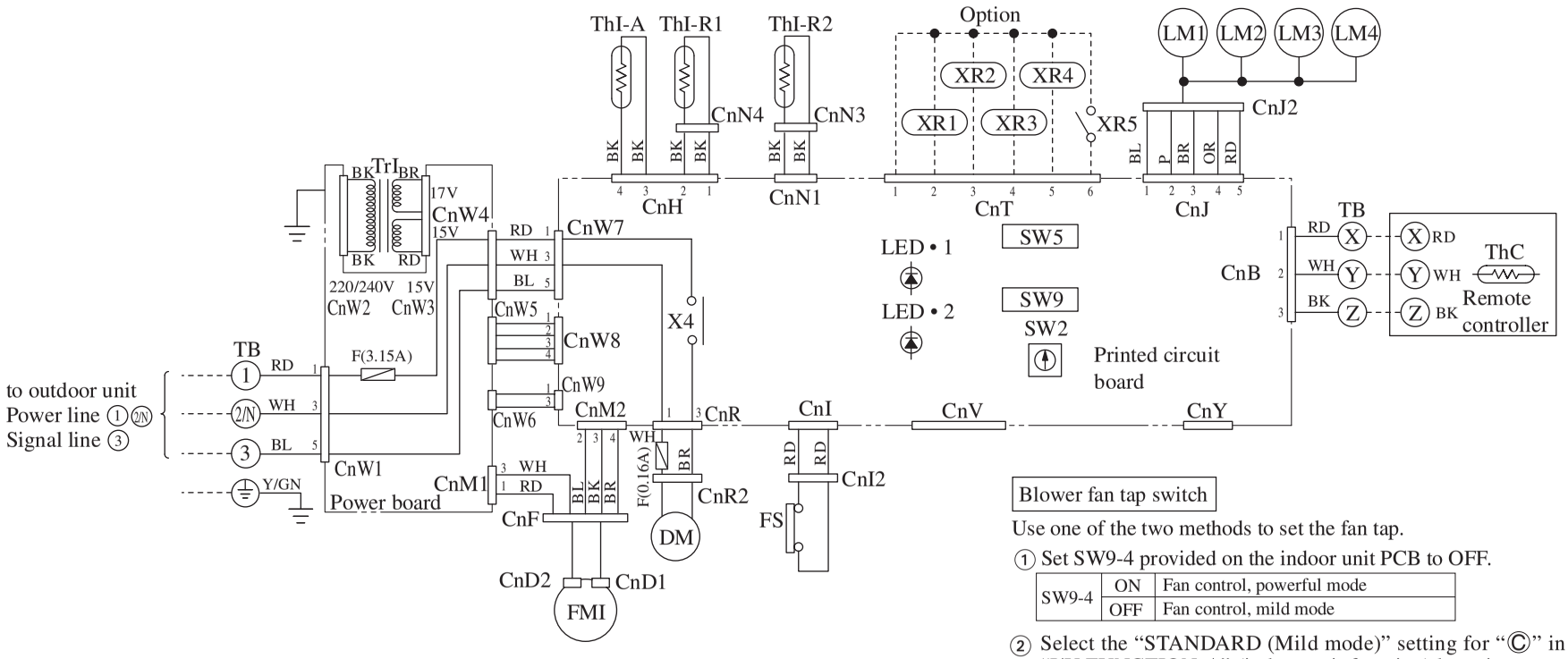
Function numberⒶ	Function descriptionⒷ	SettingⒸ
01	Hi CEILING SET	STANDARD (Mild mode)

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI	Fan motor	**SW5-3,4**	Filter sign	**XR5**	Remote operation input(volt-free contact)
CFI	Capacitor for FMI	**SW9-3**	Emergency operation	**X1,2,3,6**	Auxiliary relay(For FM)
DM	Drain motor	**TrI**	Transformer	**X4**	Auxiliary relay(For DM)
FS	Float switch	**F**	Fuse	**TB**	Terminal block(○mark)
LM1~4	Louver motor	**LED1**	Indication lamp(Red)	**CnB~Z**	Connector(▭mark)
ThI-A	Thermistor	**LED2**	Indication lamp(Green)	**■mark**	Closed-end connector
ThI-R1	Thermistor	**XR1**	Operation output(DC12V output)		
ThI-R2	Thermistor	**XR2**	Heating output(DC12V output)		
ThC	Thermistor	**XR3**	Thermo ON output(DC12V output)		
SW2	Remote controller communication address	**XR4**	Inspection output(DC12V output)		

Color marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
OR	Orange
P	Pink
RD	Red
WH	White
Y	Yellow
Y/GN	Yellow/Green



Blower fan tap switch

Use one of the two methods to set the fan tap.

① Set SW9-4 provided on the indoor unit PCB to OFF.

SW9-4	ON	Fan control, powerful mode
	OFF	Fan control, mild mode

② Select the "STANDARD (Mild mode)" setting for "Ⓒ" in #01 of "I/U FUNCTION ▲" (indoor unit function) by using remote controller function setting.

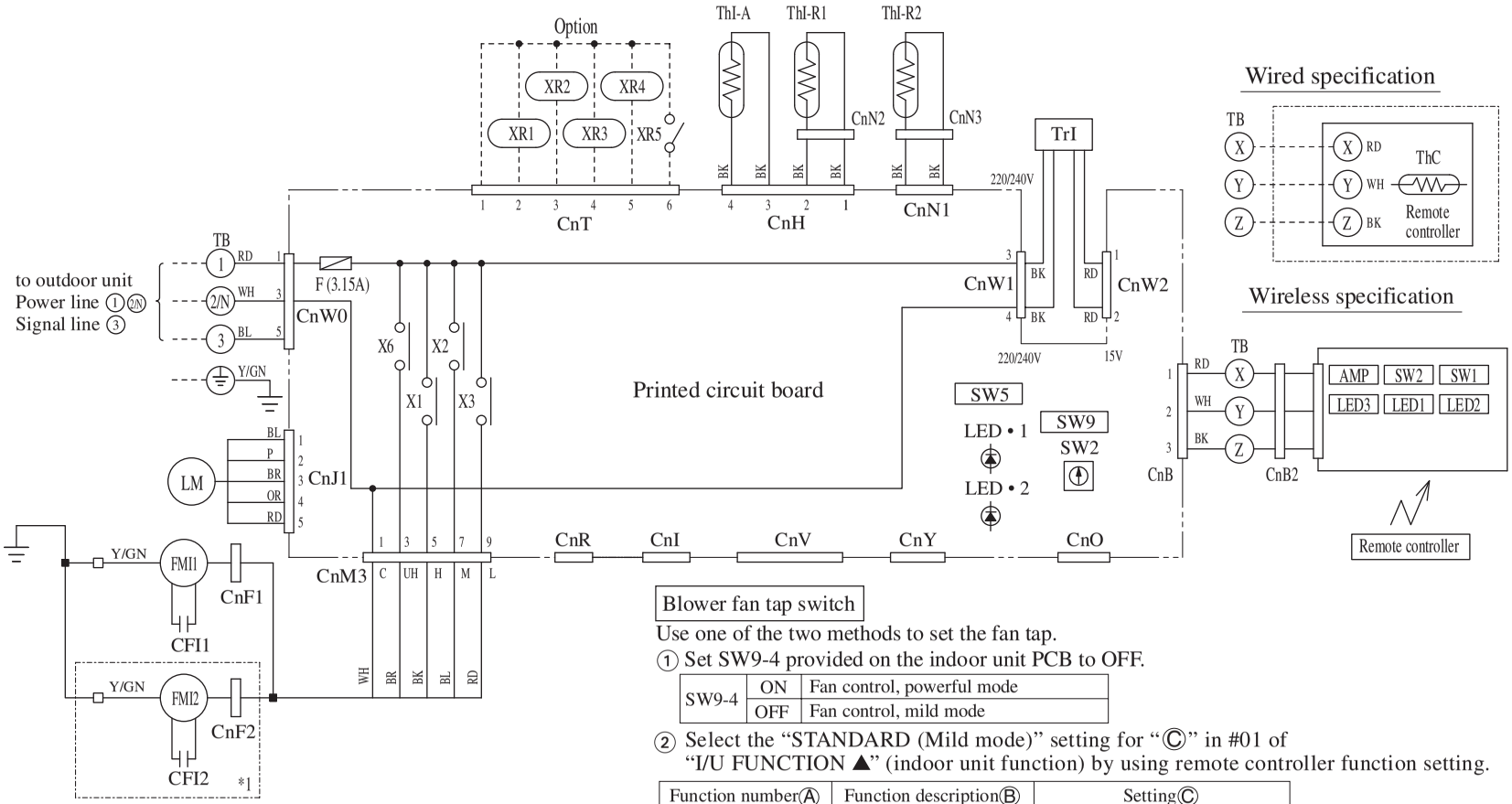
Function numberⒶ	Function descriptionⒷ	SettingⒸ
01	Hi CEILING SET	STANDARD (Mild mode)

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI	Fan motor	**SW9-3**	Emergency operation	**X4**	Auxiliary relay(For DM)
DM	Drain motor	**TrI**	Transformer	**TB**	Terminal block(○ mark)
FS	Float switch	**F**	Fuse	**CnB~Z**	Connector(▭ mark)
LM1~4	Louver motor	**LED1**	Indication lamp(Red)	**■mark**	Closed-end connector
ThI-A	Thermistor	**LED2**	Indication lamp(Green)		
ThI-R1	Thermistor	**XR1**	Operation output(DC12V output)		
ThI-R2	Thermistor	**XR2**	Heating output(DC12V output)		
ThC	Thermistor	**XR3**	Thermo ON output(DC12V output)		
SW2	Remote controller communication address	**XR4**	Inspection output(DC12V output)		
SW5-3,4	Filter sign	**XR5**	Remote operation input(volt-free contact)		

Color marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
OR	Orange
P	Pink
RD	Red
WH	White
Y	Yellow
Y/GN	Yellow/Green



Note(1) *1. FMI2 is equipped only for 251,301,401,501,601.

Blower fan tap switch

Use one of the two methods to set the fan tap.

① Set SW9-4 provided on the indoor unit PCB to OFF.

SW9-4	ON	Fan control, powerful mode
	OFF	Fan control, mild mode

② Select the "STANDARD (Mild mode)" setting for "Ⓒ" in #01 of "I/U FUNCTION ▲" (indoor unit function) by using remote controller function setting.

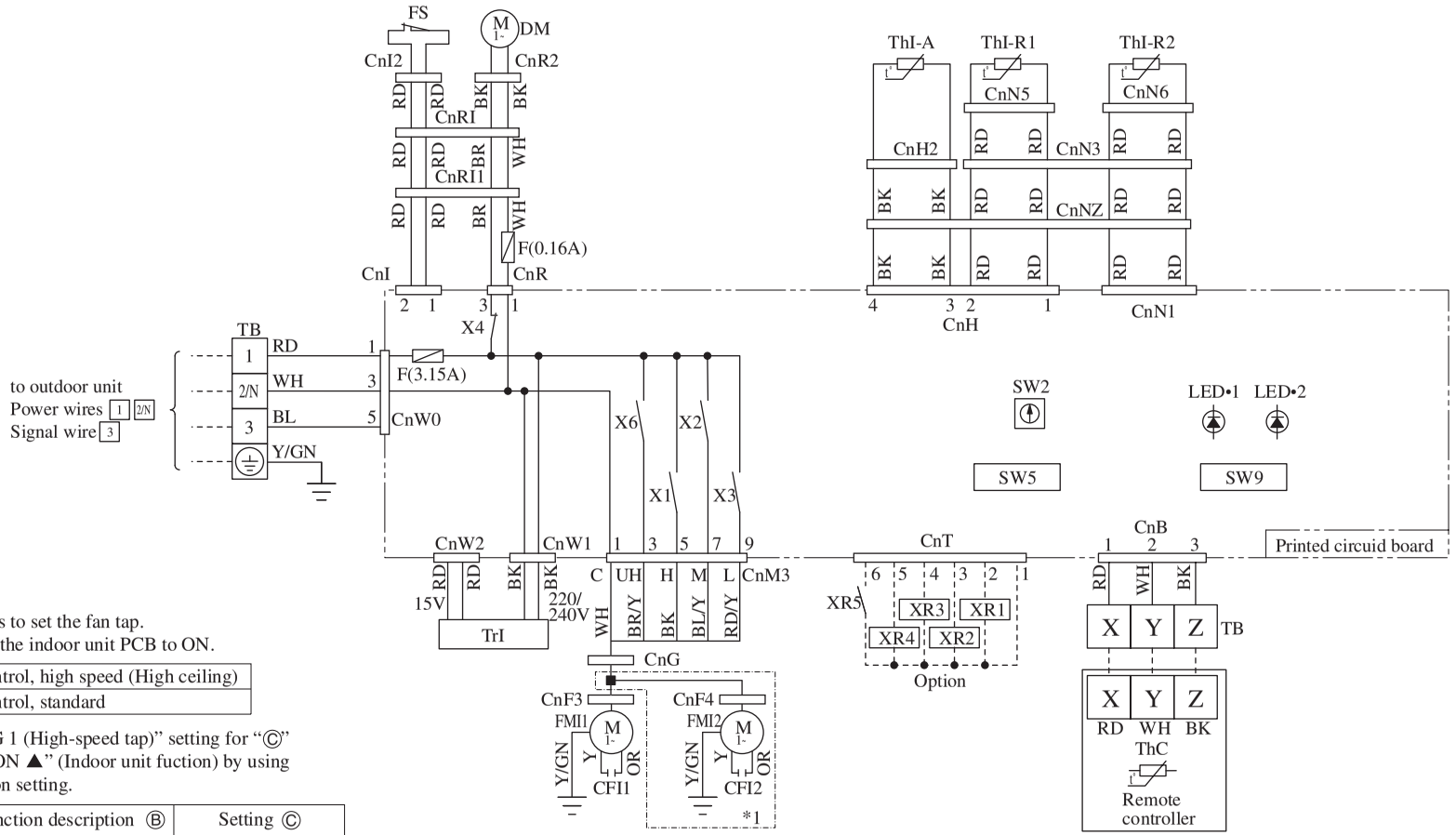
Function numberⒶ	Function descriptionⒷ	SettingⒸ
01	Hi CEILING SET	STANDARD (Mild mode)

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI1,2	Fan motor	**F**	Fuse	**■ mark**	Closed-end connector
CFI1,2	Capacitor for FMI	**LED1**	Indication lamp(Red)	**LED•1**	Indication lamp(Green-Operation)
LM	Louver motor	**LED2**	Indication lamp(Green)	**LED•2**	Indication lamp(Yellow-Timer/Check)
ThI-A	Thermistor	**XR1**	Operation output(DC12V output)	**LED•3**	7-segement indicator(For check)
ThI-R1	Thermistor	**XR2**	Heating output(DC12V output)	**SW1**	Switch(For setting)
ThI-R2	Thermistor	**XR3**	Thermo ON output(DC12V output)	**SW2**	Backup switch(Operation/Stop)
ThC	Thermistor	**XR4**	Inspection output(DC12V output)		
SW2	Remote controller communication address	**XR5**	Remote operation input(volt-free contact)		
SW5-3,4	Filter sign	**X1,2,3,6**	Auxiliary relay(For FM)		
SW9-3	Emergency operation	**TB**	Terminal block(○ mark)		
TrI	Transformer	**CnB~Z**	Connector(▭ mark)		

Color marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
OR	Orange
P	Pink
RD	Red
WH	White
Y	Yellow
Y/GN	Yellow/Green



Note(1) *1 FMI2 is equipped only for FDUMA402,502,602R.

Blower fan tap switch

Use one of the two methods to set the fan tap.

① Set SW9-4 provided on the indoor unit PCB to ON.

SW9-4	ON	Fan control, high speed (High ceiling)
	OFF	Fan control, standard

② Select the "Hi CEILING 1 (High-speed tap)" setting for "Ⓒ" in #01 of "I/U FUNCTION ▲" (Indoor unit fuction) by using remote controller function setting.

Function number Ⓐ	Function description Ⓑ	Setting Ⓒ
01	Hi CEILING SET	Hi CEILING 1

Meaning of marks

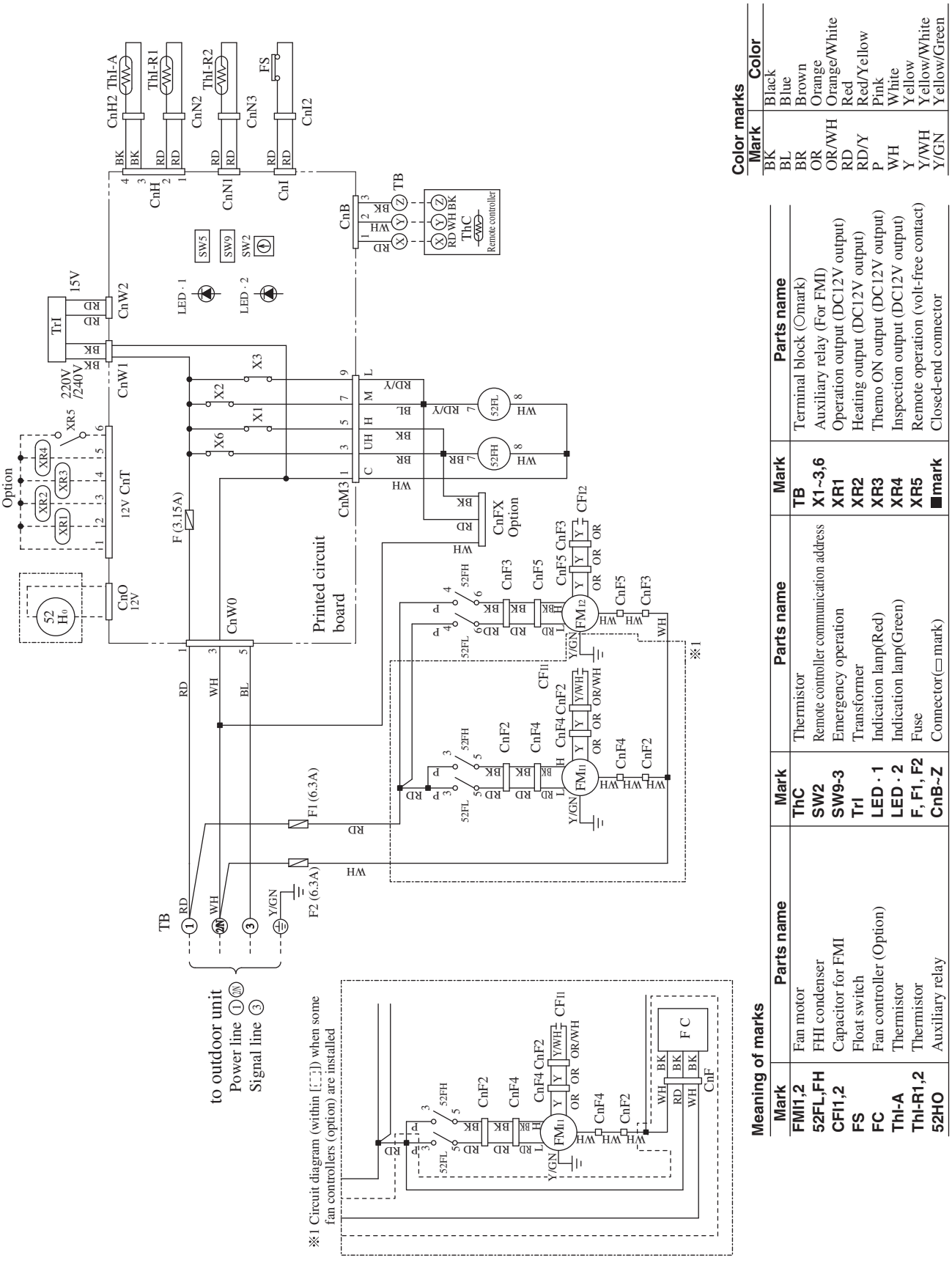
Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI1,2	Fan motor	**SW5-3,4**	Filter sign	**XR4**	Inspection output (DC12V output)
CFI1,2	Capacitor for FMI	**SW9-3**	Emerqency operation	**XR5**	Remote operation input (volt-free contact)
DM	Drain motor	**TrI**	Transformer	**X1,2,3,6**	Auxiliary relay (For FM)
FS	Float switch	**F**	Fuse	**X4**	Auxiliary relay (For DM)
ThI-A	Thermistor	**LED·1**	Indication lamp (Red:inspection)	**TB**	Terminal block (□mark)
ThI-R1	Thermistor	**LED·2**	Indication lamp (Green:normal operation)	**CnA~Z**	Connector (▭mark)
ThI-R2	Thermistor	**XR1**	Operation output (DC12V output)	**■mark**	Closed-end connector
ThC	Thermistor	**XR2**	Heating output (DC12V output)		
SW2	Remote control communications address	**XR3**	Thermo ON output (DC12V output)		

Color marks

Mark	Color	Mark	Color
BK	Black	**RD**	Red
BL	Blue	**RD/Y**	Red/Yellow
BL/Y	Blue/Yellow	**WH**	White
BR	Brown	**Y**	Yellow
BR/Y	Brown/Yellow	**Y/GN**	Yellow/Green
OR	Orange		

(e) High static pressure ducted type (FDU)

Models All models



Color marks

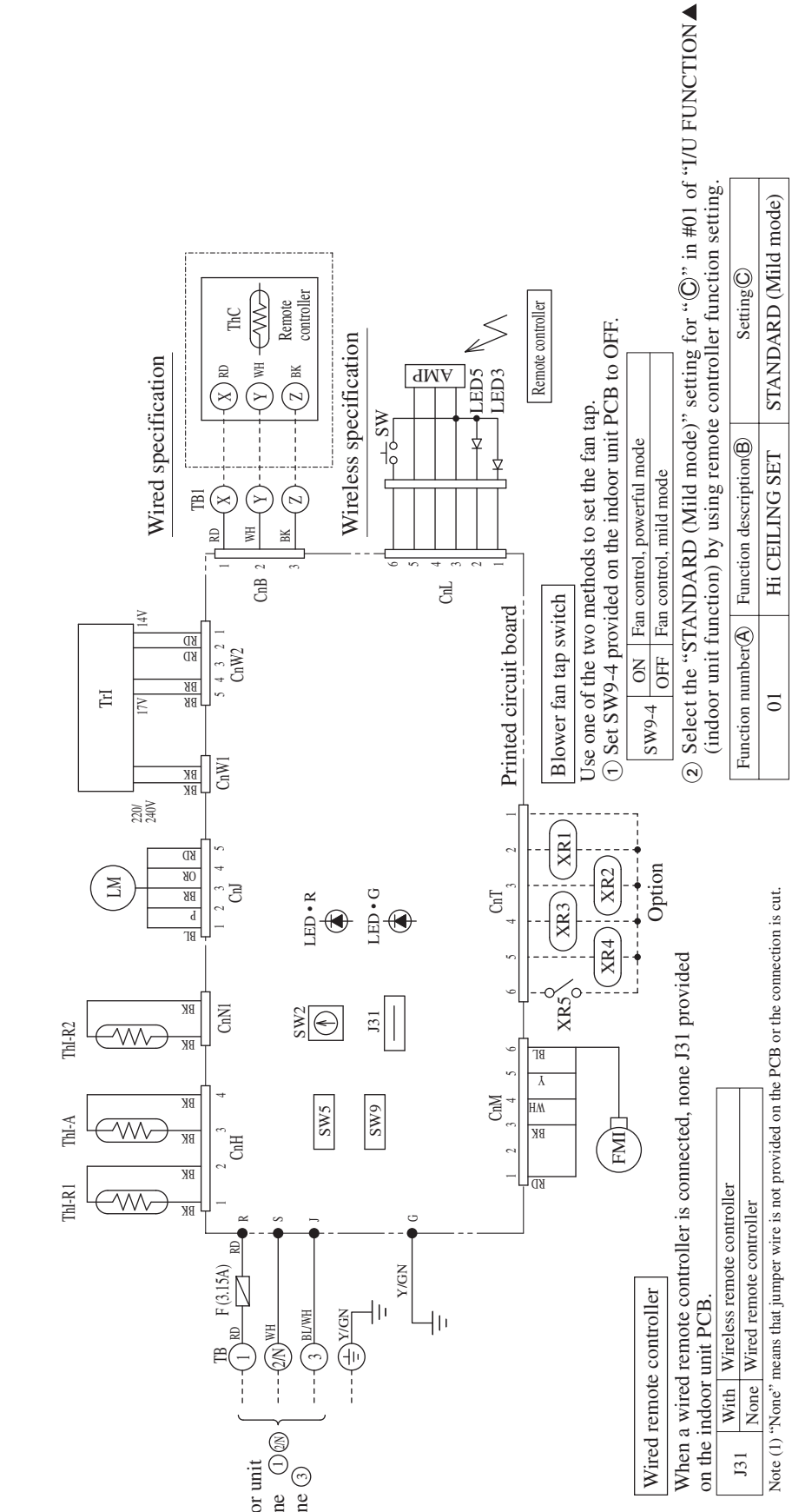
Mark	Color
BK	Black
BL	Blue
BR	Brown
OR	Orange
OR/WH	Orange/White
RD	Red
RD/Y	Red/Yellow
P	Pink
WH	White
Y	Yellow
Y/WH	Yellow/White
Y/GN	Yellow/Green

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI1,2	Fan motor	**ThC**	Thermistor	**TB**	Terminal block (○mark)
52FL,FH	FHI condenser	**SW2**	Remote controller communication address	**X1~3,6**	Auxiliary relay (For FMI)
CFI1,2	Capacitor for FMI	**SW9-3**	Emergency operation	**XR1**	Operation output (DC12V output)
FS	Float switch	**TrI**	Transformer	**XR2**	Heating output (DC12V output)
FC	Fan controller (Option)	**LED · 1**	Indication lamp(Red)	**XR3**	Themo ON output (DC12V output)
ThI-A	Thermistor	**LED · 2**	Indication lamp(Green)	**XR4**	Inspection output (DC12V output)
ThI-R1,2	Thermistor	**F, F1, F2**	Fuse	**XR5**	Remote operation (volt-free contact)
52HO	Auxiliary relay	**CnB~Z**	Connector(▭mark)	**■mark**	Closed-end connector

(f) Wall mounted type (FDKN)

Models All models



Meaning of marks

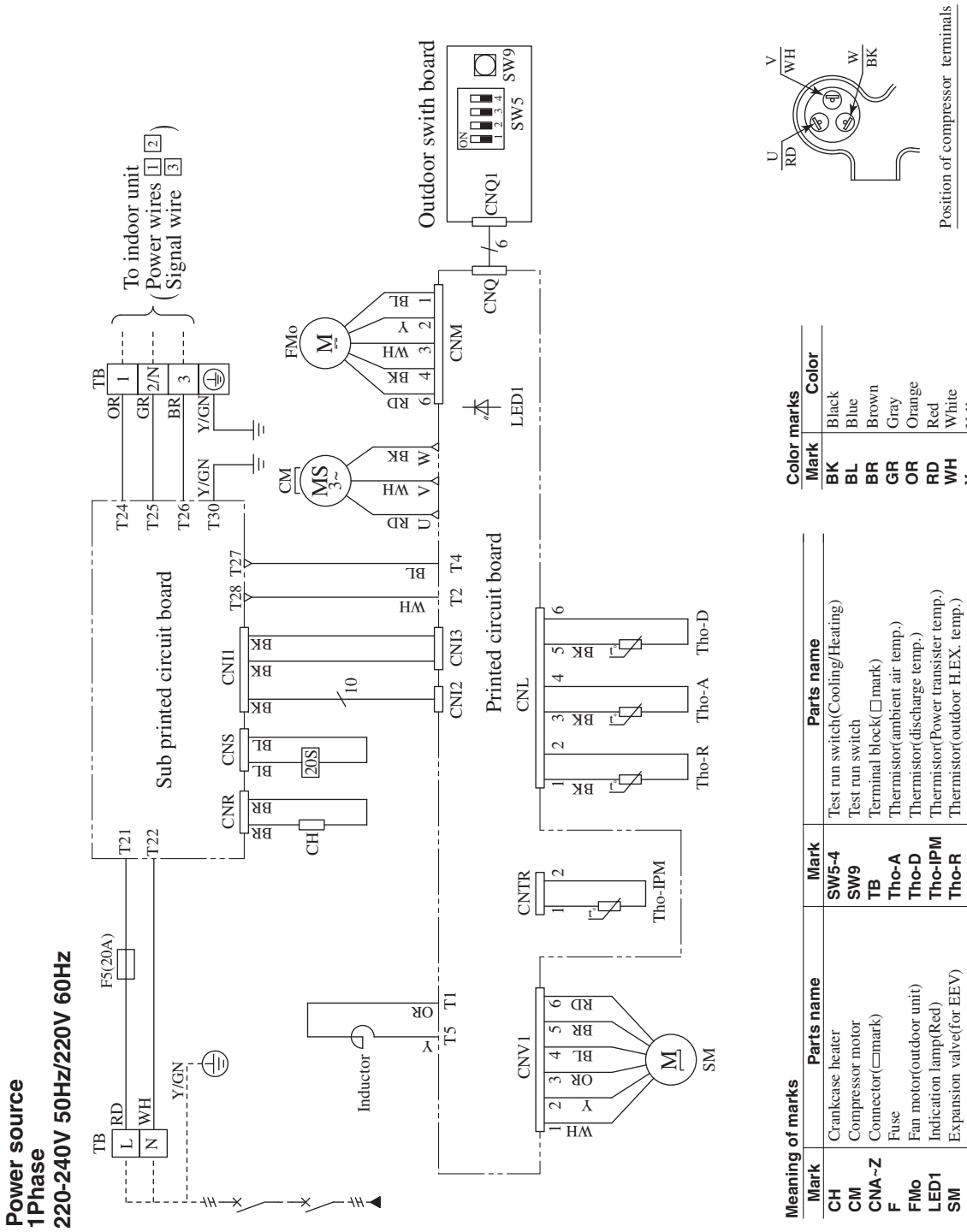
Mark	Parts name	Mark	Parts name	Mark	Parts name
FMI	Fan motor	**SW9-3**	Emergency operation	**XR3**	Thermo ON output(DC12V output)
LM	Louver motor	**LED3**	Indication lamp(Green-Run)	**XR4**	Inspection output(DC12V output)
Thl-A	Thermistor	**LED5**	Indication lamp(Yellow-Inspection alert)	**XR5**	Remote operation input(volt-free contact)
Thl-R1	Thermistor	**TrI**	Transformer	**TB**	Terminal block(○ mark)
Thl-R2	Thermistor	**F**	Fuse	**CnA~Z**	Connector(▭ mark)
ThC	Thermistor	**LED • R**	Indication lamp(Red)	**AMP**	Wirelss receiver
SW	Backup switch(ON/OFF)	**LED • G**	Indication lamp(Green)		
SW2	Remote controller communication address	**XR1**	Operation output(DC12V output)		
SW5-3,4	Filter sign	**XR2**	Heating output(DC12V output)		

Color marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
OR	Orange
RD	Red
WH	White
Y	Yellow
P	Pink
BL/WH	Blue/White
Y/GN	Yellow/Green

(2) Outdoor unit

Models FDCA151HENR,201HENR,251HENR



Position of compressor terminals

Color marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
GR	Gray
OR	Orange
RD	Red
WH	White
Y	Yellow
Y/GN	Yellow/Green

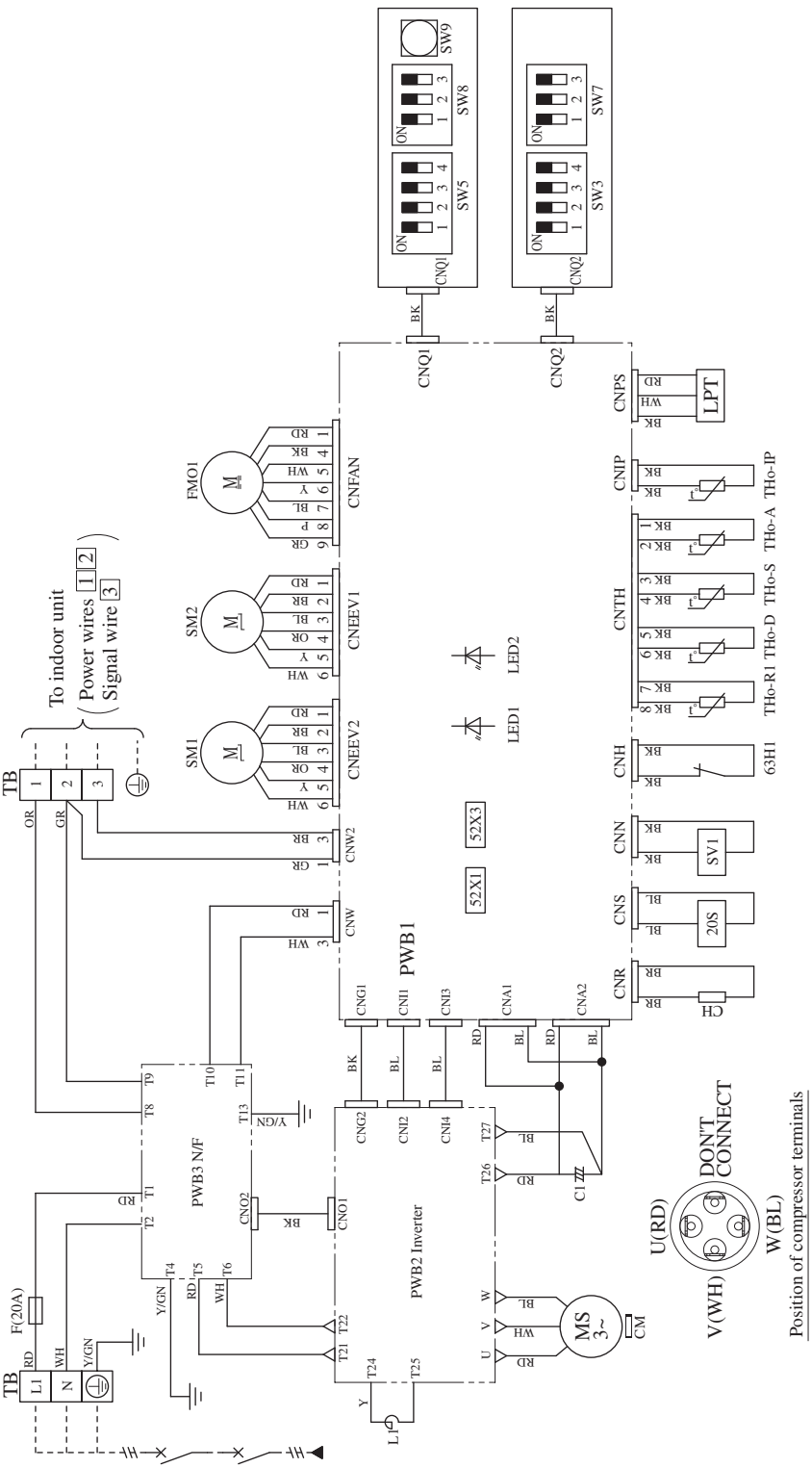
Meaning of marks

Mark	Parts name	Mark	Parts name
CH	Crankcase heater	SW5-4	Test run switch(Cooling/Heating)
CM	Compressor motor	SW9	Test run switch
CNA~Z	Connector(□mark)	TB	Terminal block(□mark)
F	Fuse	Tho-A	Thermistor(ambient air temp.)
FMo	Fan motor(outdoor unit)	Tho-D	Thermistor(discharge temp.)
LED1	Indication lamp(Red)	Tho-IPM	Thermistor(Power transister temp.)
SM	Expansion valve(for EEV)	Tho-R	Thermistor(outdoor H.EX. temp.)
SW5-1	Defrost control switch	20S	Solenoid valve for 4 way valve
SW5-2	Snow prevented fan control switch		
SW5-3	Operate test run switch		

Model FDCVA302HENR

Power source

1Phase 220-240V 50Hz/220V 60Hz



Color marks

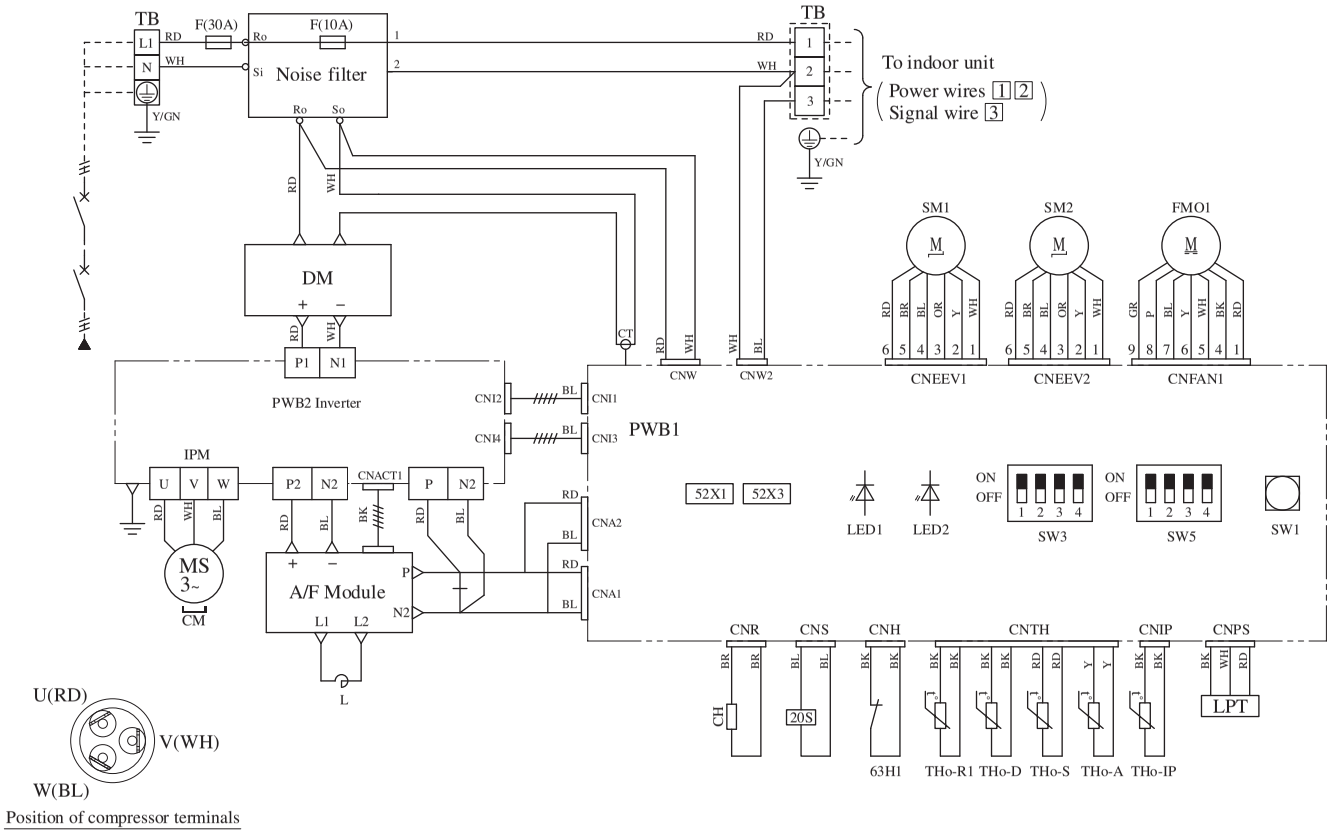
Mark	Color
BK	Black
BL	Blue
BR	Brown
OR	Orange
RD	Red
WH	White
Y	Yellow
Y/GN	Yellow/Green
GR	Gray
P	Pink

Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
CM	Compressor motor	Tho-A	Thermistor (ambient air temp.)	CnA~Z	Connector(□mark)
FMO1	Fan motor	Tho-D	Thermistor (discharge temp.)	SW9	Pump down switch
CH	Crankcase heater	Tho-R1	Thermistor (H.X. temp.)	SW3,5,7,8	Local setting switch
52X1	Auxiliary relay (for CH)	Tho-S	Thermistor (suction temp.)	LED1	Indication lamp (GREEN)
52X3	Auxiliary relay (for 20S)	Tho-IP	Thermistor (IPM)	LED2	Indication lamp (RED)
20S	Solenoid valve for 4 way valve	LPT	Low pressure sensor	L1	Reactor
SM1	Expansion valve for cooling	SV1	Solenoid valve		
SM2	Expansion valve for heating	TB	Terminal block(□mark)		
63H1	High pressure switch	F	Fuse		

Power source

1Phase 220-240V 50Hz/220V 60Hz



Position of compressor terminals

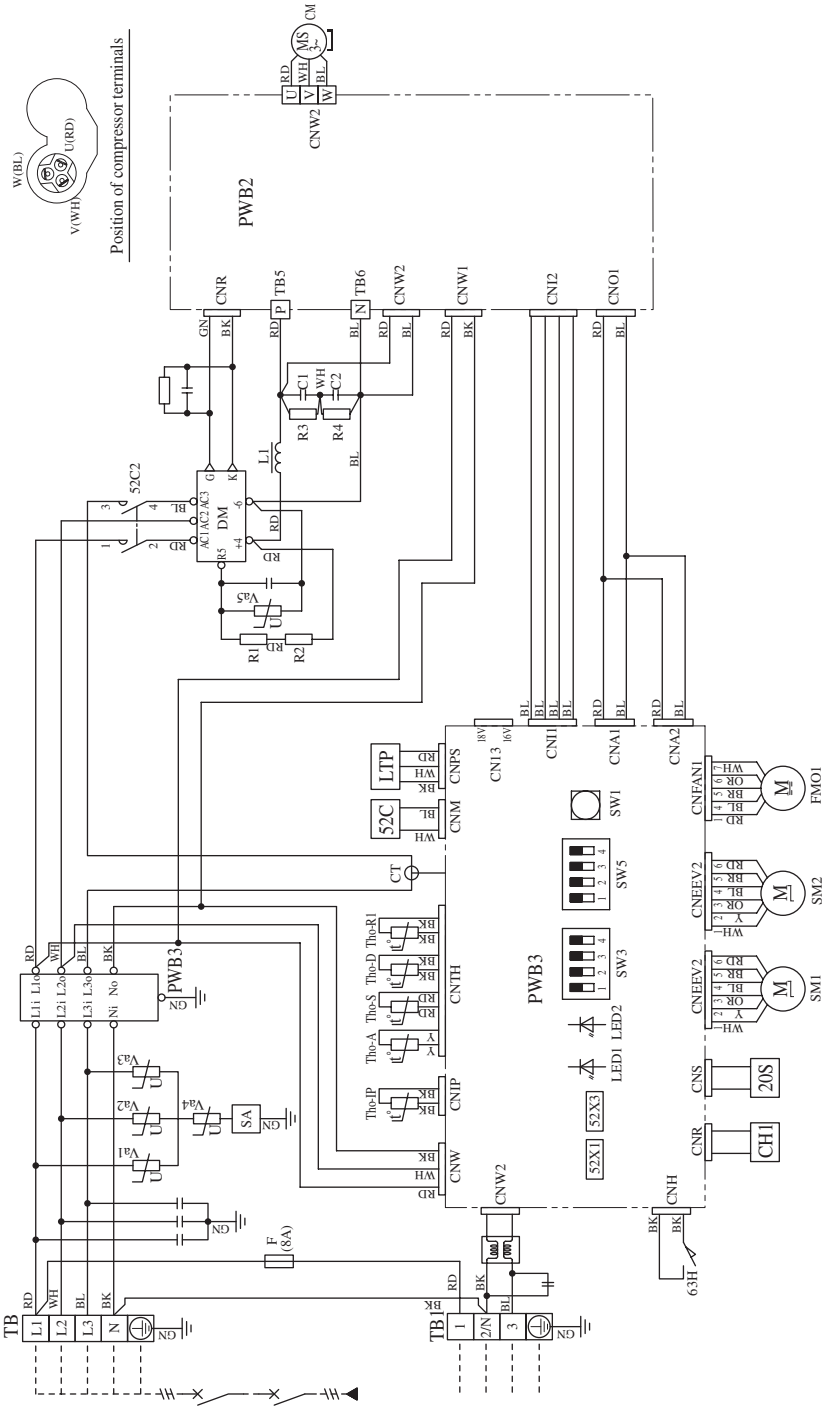
Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
CM	Compressor motor	**Tho-A**	Thermistor(ambient air temp.)	**CnA~Z**	Connector(▭mark)
FMO1	Fan motor	**Tho-D**	Thermistor(discharge temp.)	**SW1**	Pump down switch
CH	Crankcase heater	**Tho-R1**	Thermistor(H.X. temp.)	**SW3,5**	Local setting switch
52X1	Auxiliary relay(for CH)	**Tho-S**	Thermistor(suction temp.)	**LED1**	Indication lamp(RED)
52X3	Auxiliary relay(for 20S)	**Tho-IP**	Thermistor(IPM)	**LED2**	Indication lamp(GREEN)
20S	Solenoid valve for 4 way valve	**LPT**	Low pressure sensor	**DM**	Diode module
SM1	Expansion valve for cooling	**CT**	Current sensor	**L1**	Reactor
SM2	Expansion valve for heating	**TB**	Terminal block(□mark)		
63H1	High pressure switch	**F**	Fuse		

Color marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
OR	Orange
RD	Red
WH	White
Y	Yellow
Y/GN	Yellow/Green
GR	Gray
P	Pink

Power source
3Phase 380-415V 50Hz/380V 60Hz



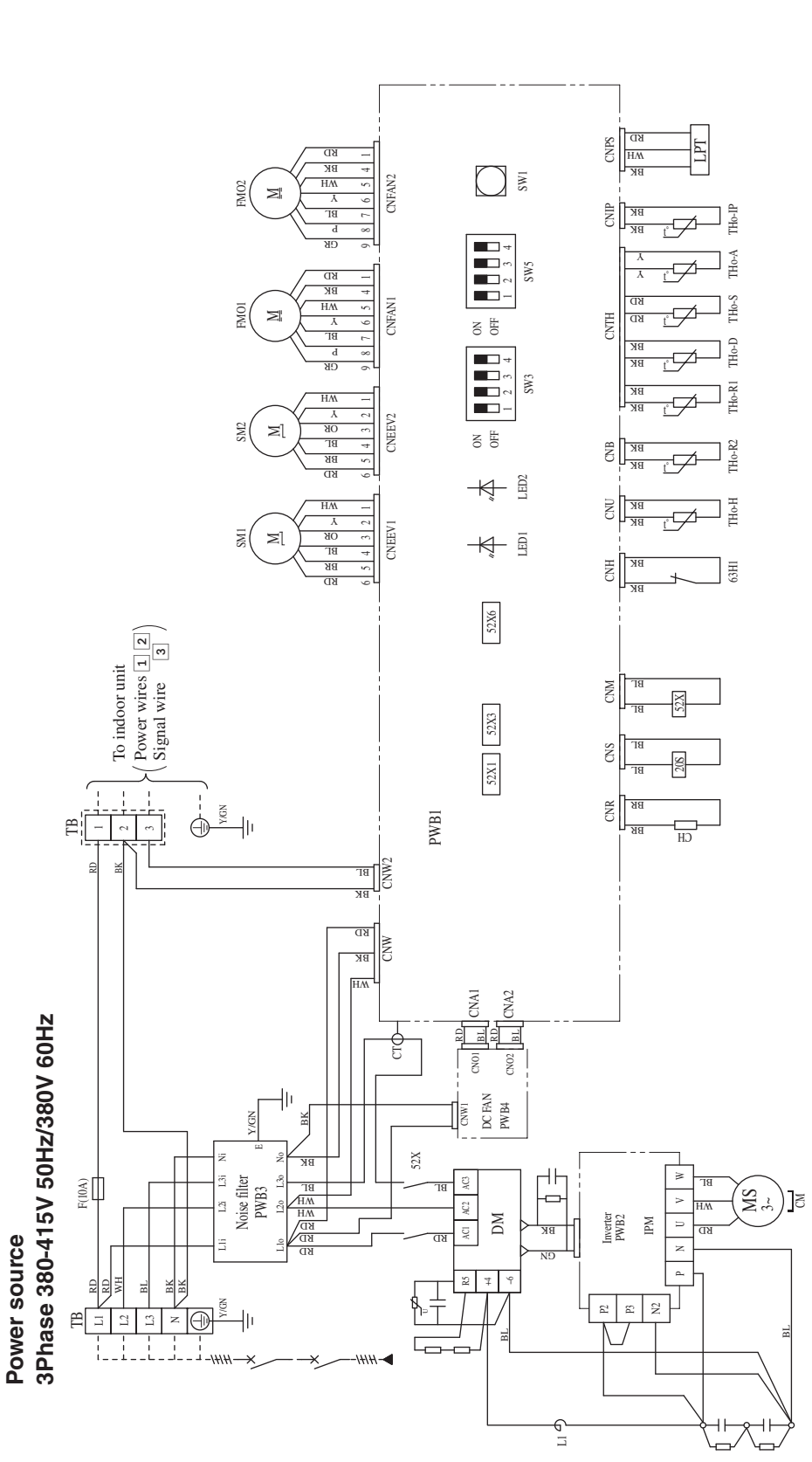
Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
CM	Compressor motor	**Tho-A**	Thermistor(ambient air temp.)	**CnA~Z**	Connector(□mark)
FMO1	Fan motor	**Tho-D**	Thermistor(discharge temp.)	**SW1**	Pump down switch
CH	Crankcase heater	**Tho-R1**	Thermistor(H.X. temp.)	**SW3,5**	Local setting switch
52X1	Auxiliary relay(for CH)	**Tho-S**	Thermistor(suction temp.)	**LED1**	Indication lamp(RED)
52X3	Auxiliary relay(for 20S)	**Tho-IP**	Thermistor(IPM)	**LED2**	Indication lamp(GREEN)
20S	Solenoid valve for 4 way valve	**LPT**	Low pressure sensor	**DM**	Diode module
SM1	Expansion valve for cooling	**CT**	Current sensor	**L1**	Reactor
SM2	Expansion valve for heating	**TB**	Terminal block(□mark)		
63H1	High pressure switch	**F**	Fuse		

Color marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
GN	Green
OR	Orange
RD	Red
WH	White
Y	Yellow

Models FDCVA802HESAR, 1002HESAR



Meaning of marks

Mark	Parts name	Mark	Parts name	Mark	Parts name
CM	Compressor motor	**63H1**	High pressure switch	**F**	Fuse
FMO1,2	Fan motor	**Tho-A**	Thermistor(ambient air temp.)	**CnA~Z**	Connector(▭mark)
CH	Crankcase heater	**Tho-H**	Thermistor(dome temp.)	**SW1**	Pump down switch
52X	Relay (for CM)	**Tho-D**	Thermistor(discharge temp.)	**SW3,5**	Local setting switch
52X1	Auxiliary relay(for CH)	**Tho-R1,2**	Thermistor(H.X. temp.)	**LED1**	Indication lamp(RED)
52X3	Auxiliary relay(for 20S)	**Tho-S**	Thermistor(suction temp.)	**LED2**	Indication lamp(GREEN)
52X6	Auxiliary relay(for 52C)	**Tho-IP**	Thermistor(IPM)	**DM**	Diode module
20S	Solenoid valve for 4 way valve	**LPT**	Low pressure sensor	**L**	Reactor
SM1	Expansion valve for cooling	**CT**	Current sensor		
SM2	Expansion valve for heating	**TB**	Terminal block(□mark)		

Color marks

Mark	Color
BK	Black
BL	Blue
BR	Brown
OR	Orange
RD	Red
WH	White
Y	Yellow
Y/GN	Yellow/Green
GR	Gray
P	Pink

1.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

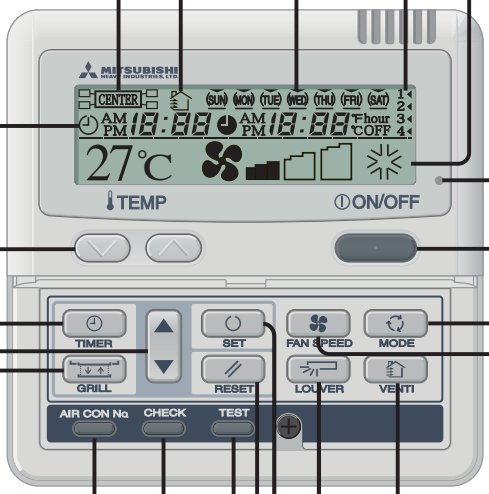
(1) Remote controller

(a) Wired remote controller

The figure below shows the remote controller with the cover opened. Note that all the items that may be displayed in the liquid crystal display area are shown in the figure for the sake of explanation.

Characters displayed with dots in the liquid crystal display area are abbreviated.

Pull the cover downward to open it.



Central control display
Displayed when the air conditioning system is controlled by the option controller.

Timer operation display
Displays the settings related to timer operation.

Temperature setting switches
These switches are used to set the temperature of the room.

TIMER switch
This switch is used to select a timer mode.

Timer setting switches
These switches are used to set the timer mode and time.

GRILL switch
This switch has no function.
When this switch is pressed,
☜INVALID OPER (Invalid Operation)
is displayed, but it does not mean a failure.

AIR CON No. (Air conditioning system No.) switch
Displays the number of the connected air conditioning system.

CHECK switch
This switch is used at servicing.

TEST switch
This switch is used during test operation.

Vent Indicator
Indicates operation in the Ventilation mode.

Weekly timer display
Displays the settings of the weekly timer.

Operation setting display area
Displays setting temperature, airflow volume, operation mode and operation message.

Operation/Check indicator light
During operation: Lit in green
In case of error: Flashing in red

ON/OFF switch
This switch is used to operate and stop the air conditioning system. Press the switch once to operate the system and press it once again to stop the system.

MODE switch
This switch is used to switch between operation modes.

FAN SPEED switch
This switch is used to set the airflow volume.

VENT switch
Switch that operates the connected ventilator.

LOUVER switch
This switch is used to operate/stop the swing louver.

SET switch
This switch is used to apply the timer operation setting.
This switch is also used to make silent mode operation settings.

RESET switch
The switch which returns to a previous step.

* If you press any of the switches above and "☜INVALID OPER" is display, the switch has no function. But it does not mean a failure.

(b) Wireless remote controller

Indication section

ROOM TEMP. indicator

Indicates set temperature.

FAN SPEED indicator

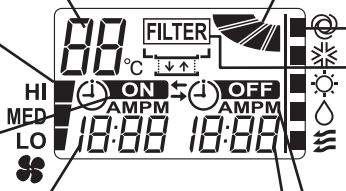
Indicates the selected blow rate.

ON-TIMER indicator

Indicated when ON-TIMER is set.

ON-TIMER setting time indicator

Indicates the ON-TIMER setting time.
Indicates nothing when ON-TIMER is not set.



AIR FLOW indicator

Indicates the condition of swing flap.

OPERATION MODE indicator

Indicates selected operation with ■ lamp.

FILTER indicator

Indicates for 2 seconds when FILTER button is pressed.

OFF-TIMER indicator

Indicated when OFF-TIMER set.

OFF-TIMER setting time indicator

Indicates OFF-TIMER setting time. Indicates the current time when the OFF-TIMER is not set.

Operation section

Signal sender

Signal are sent to the air conditioner from here.

FAN SPEED button

Every time when the button is pressed, the mode is sequentially changed in order.

→ HI → MED → LO

FILTER button

Used to reset (turn off) the filter sign. Press the button only after completing the filter cleaning.

ON-TIMER button

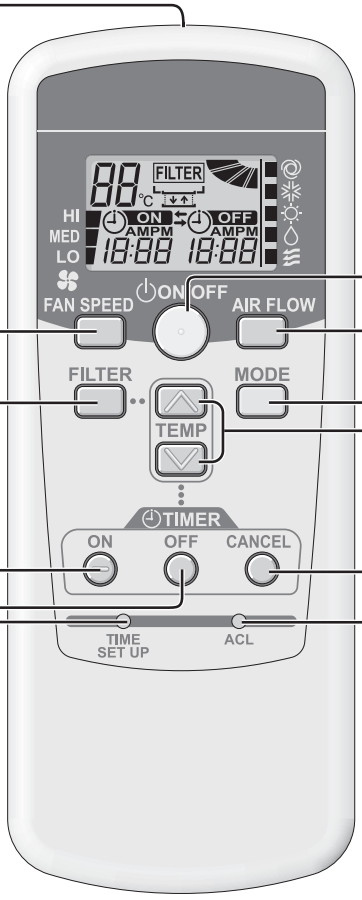
This button selects ON-TIMER operation.

OFF-TIMER button

This button selects OFF-TIMER operation.

TIME SET UP switch

This switch for setting the time.



ON/OFF button

When the button is pressed, the air conditioner is started, and when the button is pressed once again, it is stopped.

AIR FLOW button

Used to start or stop the swing flap.

OPERATION MODE select button

The operation mode on the side of the ■ indicator is the currently selected operation mode. It will switch in order.

→ (AUTO) → (COOL) → (HEAT) → (DRY) → (FAN) →

ROOM TEMP. button

Press either the ∧ or ∨ button to set the room temperature.

TIMER CANCEL button

This button cancels the timer settings.

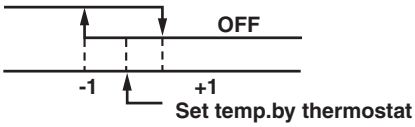
ACL switch

This is a switch to reset the microcomputer.

(2) Operation control function by the indoor controller

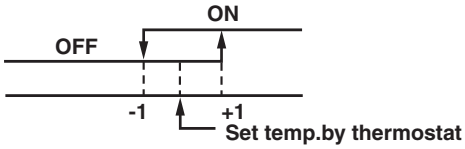
(a) Room temperature control (Differential of thermostat)

Heating operation



Temperature difference between thermostat set temp. and return air temp. (Detected by Th_I-A)

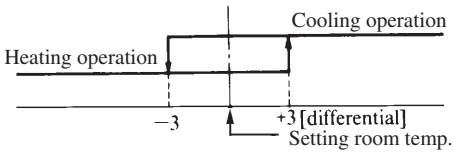
Cooling operation



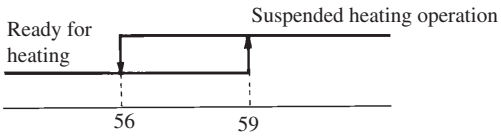
Temperature difference between thermostat set temp. and return air temp. (Detected by Th_I-A)

(b) Automatic operation

If the Auto mode is selected on the remote control device, the selection of cooling or heating can be made automatically depending on the room temperature (and the temperature of indoor heat exchanger). (When the switching between the cooling and the heating is made within 3 minutes, the compressor will not operate for 3 minutes.) This will make much easier the switching of cooling/heating at the change of season and can be adapted to the unmanned operation at bank cash dispenser.



Room temp. (detected at Th_I-A) [deg]



Indoor heat exchanger temperature (˚C)

Notes (1) During the automatic switching of cooling/heating the room temperature is controlled based on the setting of room temperature.

(2) If the temperature of indoor heat exchanger rises beyond 59˚C during the heating operation, it is switched automatically to the cooling operation. For an hour after this switching, the heating operation is suspended regardless of the temperature as shown at left.

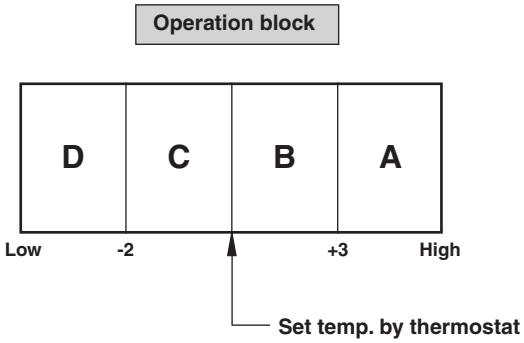
(c) Control parts operation during cooling and heating

Function / Control part	Cooling		Fan	Heating			Dry
	Thermostat ON	Thermostat OFF	–	Thermostat ON	Thermostat OFF	Hot start (Defrost)	Defrosting
Compressor	○	×	×	○	×	○	○/×
4-way valve	×	×	×	○	○	○	×
Outdoor fan	○	×	×	○	×	○	○/×
Indoor fan	○	○	○	○	○	○/×	○/×
Louver motor	○/×						
Condensate motor	○	×(2)	×(2)	○(2)			○

Notes (1) ○:ON
×:OFF
○/×:According to control other than temperature control.
(2) Delay control of drain motor is ON.

(d) Dehumidifying operation ("THERMAL DRY")

The compressor, the indoor fan motor and the outdoor fan motor are operated intermittently under thermistor (Th_I-A) control according to the appropriate operation block, to provide cooling operation for the dehumidifying.



Pattern of operation CM, FM_O: ON FM_I: ON

Operation block	Thermal drying starting (for 8 or 16 minutes after operation started)	Normal thermal dry operation (after completion of thermal drying)
A		(8 minutes) Continuous cooling operation (FM_I:Lo)
B	(16 minutes) Normal cooling operation • The air flow is set at 1 speed lower than the set air flow.	(8 minutes) CM, FM_O FM_I 4 min. 4 min. 0.5 min. Temp. check
C	(8 minutes) CM, FM_O FM_I 5 min. 3 min. 0.5 min. Temp.check	(8 minutes) CM, FM_O FM_I 5 min. 3 min. 0.5 min. Temp. check
D		(8 minutes) All stoppage

Notes (1) Blocks Ⓐ and Ⓑ: Normal cooling operation for 16 minutes after operation starts, then when the set temperature is reached, the thermostat stops. 16 minutes later, it switches to normal operation.
Blocks Ⓒ and Ⓓ: The operation mode shown in the table above is performed for 8 minutes. After 8 minutes, it switches to normal operation.
(2) Under normal operation, the temperature is checked every 8 minutes after normal operation starts to determine which block is operating, then the operation mode is decided.

(e) Timer Operation

1) Simple Timer

This sets the amount of time from the current time that the air conditioner goes OFF.

The off time can be selected in 10 steps, from "Off 1 hour from now" to "Off 10 hours from now." After the simple timer is set, the number of hours until the air conditioning goes off is displayed in one hour units from the current time.

2) Time Off Timer

The time the air conditioner goes OFF can be set in 10-minute increments.

3) Time On Timer

The time the air conditioner goes ON can be set in 10-minute increments. The set temperature can also be set at the same time.

4) Weekly Timer

Each day, it is possible to set this timer's operation up to 4 times (On timer, or Off timer).

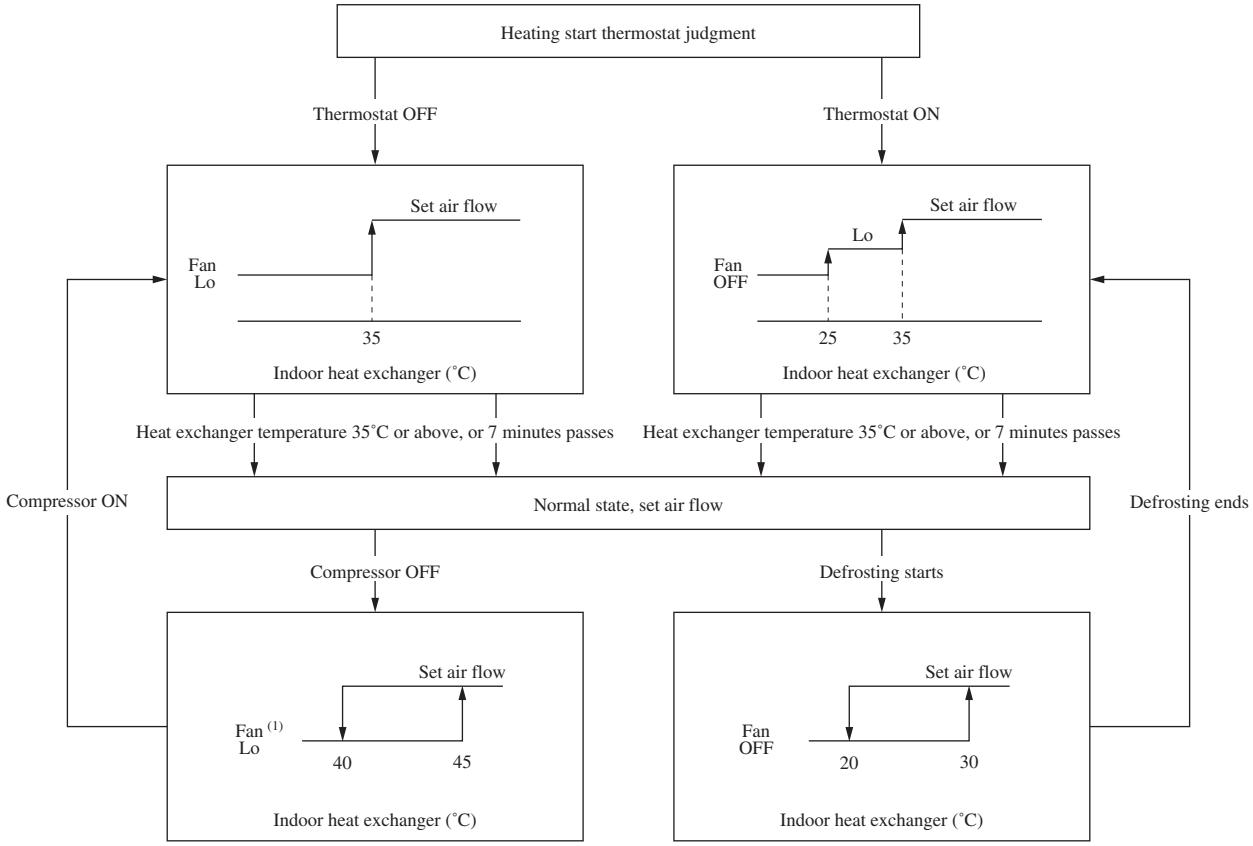
5) Possible joint use timer operation setting combinations

	Simple Timer	Off Timer	On Timer	Weekly Timer
Simple Timer		×	◯	×
Off Timer	×		◯	×
On Timer	◯	◯		×
Weekly Timer	×	×	×	

Note (1) ◯: Possible, ×: Not possible

(f) Hot start (Cold draft prevention during heating)

When heating operation starts, when the thermostat is reset, during a defrosting operation or when resetting a heating operation, in order to prevent a cold draft, the indoor heat exchanger temperature (sensed by Thı-R1 and R2) control the indoor fan.

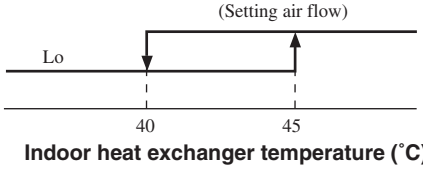


Notes (1) If J2/SW7-2 is open/OFF, fan keeps OFF in case the indoor heat exchanger temperature is lower than 40°C for 5 minutes at maximum and after that changes to Lo.

(2) During Hot Start (the compressor is operating and the indoor fan is not operating at the set air flow), Heating preparation is displayed.

(g) FM control with the heating thermostat turned off (For cold draft prevention)

In order to prevent a cold draft while the heating thermostat is turned off, the indoor fan is controlled in response to the temperature of the indoor heat exchanger as illustrated below. It should be noted that if jumper wire J2 (SW7-2) on the indoor PCB is open (OFF), the indoor fan will stop in case the indoor heat exchanger temperature is lower than 40°C for first 5 minutes at longest and then it is turned into Lo speed regardless of the temperature.

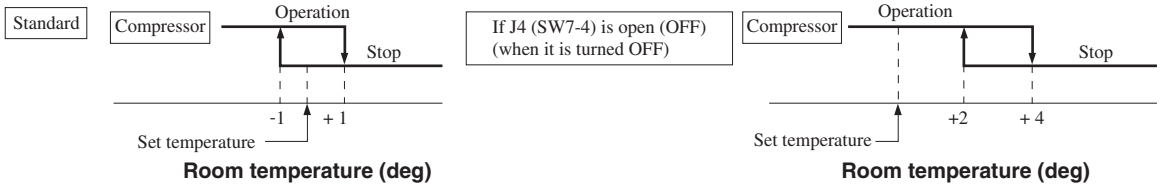


Note (1) After the thermostat is reset, it returns to the hot start control.

(h) Room temperature sensing temperature compensation during heating

When the J4 (SW7-4) on the indoor PCB is open (OFF), the condition for thermostat ON/OFF is offset by +3°C.

In case the warm air is accumulated on the ceiling and the indoor unit is turned into thermostatic OFF easily, it is possible to extend thermostatic ON period by this fuction. However, the upper limit for the set temperature is 30°C.



(i) Filter sign

When the cumulative operation time (regardless of thermostatic ON/OFF) reaches 180 hours (1), "FILTER CLEANING" is displayed on the remote control unit. (This is displayed whether the system is running or not, have some error or not, and is controlled by a centralized remote control or not.)

Notes (1) The following controls are enabled by the combination of the ON/OFF settings of 2 switches on the indoor unit PCB, SW5-3 and SW5-4.
(They are switched OFF when the unit is shipped from the factory. The setting time is 180 hours.)

Switch	Function
SW5-3 OFF	Setting time: 180 hrs. (when shipped from factory)
SW5-4 OFF	
SW5-3 OFF	Setting time: 600 hrs. (Display)
SW5-4 ON	
SW5-3 ON	Setting time: 1000 hrs. (Display)
SW5-4 OFF	
SW5-3 ON	Setting time: 1000 hrs. (Unit stop)
SW5-4 ON	

(2) When SW5-3, SW5-4 is switched ON, the message "FILTER CLEANING" is displayed after the setting time has passed, then the unit stops after another 24 hours have passed (including stop time).

(j) Auto swing control (Except the FDU, FDUM model)

1) Louver Control

a) While the air conditioner is operating, press the "LOUVER" switch.
"AUTO " is displayed for 3 seconds and the swing louvers move up and down continuously.

b) When fixing the position of the swing louvers, press the "LOUVER" switch once while the swing louvers are moving. 4 stop positions are displayed in sequence at 1-second intervals.
When the display comes to the position where you would like to stop the louvers, press the "LOUVER" switch once more. The display will stop the message (ex. "STOP 1- ") will be displayed for 3 seconds, then the swing louvers will stop.

c) Louver operation when the louver 4-position controller's power goes On
When the power is turned ON, the louvers automatically swing 1 time automatically (without remote control operation).
This is done so that the microcomputer can confirm the louver's position and input the louver motor's (LM) position to the microcomputer.

Note (1) When the "LOUVER" switch is turned ON, the louver position LCD display displays the swing operation for 10 seconds.
Then "AUTO " is displayed for 3 seconds.

2) Auto louver horizontal set during heating

During display of " " (Heating Preparation) (during hot start and heating thermostat OFF), the louvers are in the horizontal position regardless of the operation of the auto swing switch (auto swing and louver stop). (in order to avoid cold draft.) However, the indication for the louver position is kept as previous position.
If the " " (Heating Preparation) display goes off, the LCD display also returns to the original display.

3) Louver free stop control

When J5 (SW8-1), which is for the setting for the stopping position of the louver, is open (OFF), louver swing is stopped when the indoor unit receives the signal to stop swinging it from the remote controller. When the signal is inputted again, the swing starts from the position.

(k) Condensate pump motor (DM) Control [FDT and FDUM models only]

(a) Drain motor is started no sooner than the compressor is turned ON during cooling or dehumidifying operation. The drain motor continues to operate for 5 minutes after the stop of unit operation, stop with the error stop, thermostat stop and at switching from cooling or dehumidifying operation to blowing or heating operation. When there is any unit subjected to oil return control, the drain motor is operated for 5 minutes at such occasion.

(b) Overflow detection is performed by the float switch at all times regardless of the operating mode. If the float switch circuit is detected to be open continuously for 3 seconds (or when the float switch is disconnected or a wire is broken), an abnormal stop (E9) is performed and the condensate pump motor runs until the float switch recovers.

(l) Air flow mode control

Air flow mode control can be changed using DIP switch SW9-4 on the indoor PCB.

FDTC, FDT, FDEN, FDKN models

DIP SW / Item	SW9-4 OFF (Mild Mode Control)	SW9-4 ON (Powerful mode Control)
Air flow mode	Hi, Me, Lo	UHi, Hi, Me

Notes (1) When the unit is shipped, SW9-4 is turned OFF.
(2) If SW9-4 is ON, the fan operates in Lo even during hot start and heating thermostat OFF.

FDUM model

DIP SW / Item	SW9-4 OFF (Standard)	SW9-4 ON (High speed)
Air flow mode	Hi, Me, Lo	UHi, Hi, Me

Notes (1) When the unit is shipped, SW9-4 is turned OFF.
(2) If SW9-4 is ON, the fan operates in Lo even during hot start and heating thermostat OFF.

(m) Compressor inching prevention control

1) 3-minute timer

If the compressor stops due to operation of the thermostat, the Run switch on the remote controller or some trouble, it is not re-started for 3 minutes. However, when the power is turned ON, the 3-minute timer becomes inactive.

2) 3-minute forced operation timer

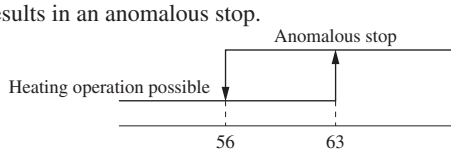
a) The compressor keeps operating for 3 minutes after starting. However, in case that the system is stopped by the remote controller, or thermostatic OFF caused by changing operation mode, the compressor will stop.

b) During 3-minute forced operation timer control in heating operation, if the thermostat goes OFF, the louver position is set to the horizontal position.

Note (1) The compressor stops when protection control starts.

(n) Heating overload protection

If an overload condition is sensed continuously for 2 seconds by the indoor heat exchanger temperature during heating (sensed by Thi-R1 or R2), the compressor is stopped. After a 3-minute delay, the compressor is restarted. If the overload is sensed 5 times within 60 minutes of the first time it was detected, an anomalous stop is performed (E8). Also, if the overload state is sensed continuously for 6 minutes, it results in an anomalous stop.

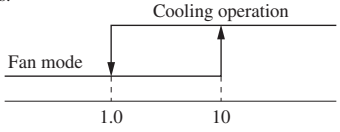


Indoor heat exchanger temperature(˚C)

(o) Frost prevention during cooling, dehumidification

1) In order to avoid frosting on the heat exchanger during cooling and dehumidification, 3(4) minutes after compressor operation starts, if the indoor heat exchanger temperature (detected by Thi-R1 or R2) is 1.5˚C or lower after 3 minutes since the compressor starts, the compressor speed is reduced. 30 seconds (1 minute) later, the indoor unit heat exchanger temperature is checked every 1 minute and if the temperature is still 1.5°C or lower, compressor speed is reduced again. If the temperature becomes lower than 3.5˚C continuously for 5, 6 minutes, this control is terminated.Furthermore, even if the compressor speed is reduced, if the indoor heat exchanger becomes as shown in the diagram below, the unit switches to fan mode.

Note (1) Values in ( ) show for the 302~1002 models.



Indoor heat exchanger temperature (˚C)

(b) Indoor fan speed switching

In cooling operation (except drying), when frost prevention control is started, indoor fan speed is switched.

1) FDTC, FDT(151~401), FDU, FDUM, FDEN model

a) When the suction temperature of indoor units (detected by Thi-A) is lower than 23°C, this control is invalid. Two hours after frost prevention control, this control is terminated.

b) Upon another detection within 15 minutes after frost prevention control, the indoor fan speed is increased by 1 tap.

Note (1) Indoor fan speed can be increased by up to 2 taps.

c) This control can be set to Enabled (ON)/ Disabled (OFF) with the dip switch SW8-2(J6) on the indoor units control board.

2) FDT(501, 602), FDKN model

a) When the detected suction temperature of indoor units (detected by Thi-A) is higher than 23°C, and the detected temperature of heat exchanger of indoor unit (Thi-R1 or R2) is lower than 3.5°C, increase the indoor fan speed by 20rpm.

b) Upon another a) detection after indoor fan speed is increased, increase the indoor fan speed by 20rpm again.

Note (1) Indoor fan speed can be increased by up to 2 taps.

c) This control can be set to Enabled (ON)/ Disabled (OFF) with the dip switch SW8-2(J6) on the indoor units control board.

(p) Thermistor (Air return, heat exchanger) disconnected wire detection.

If the temperature sensed by the thermistor is –50°C or lower continuously for 5 seconds, the compressor stops. After a 3-minute delay, the compressor is restarted, but if a recurrence is detected within 60 minutes of the 1st time, or if it is sensed continuously for 6 minutes, it results in an anomalous stop (E6, E7).

(q) Using 1 remote controller to control multiple units (indoor units - up to 16 units)

1) Function

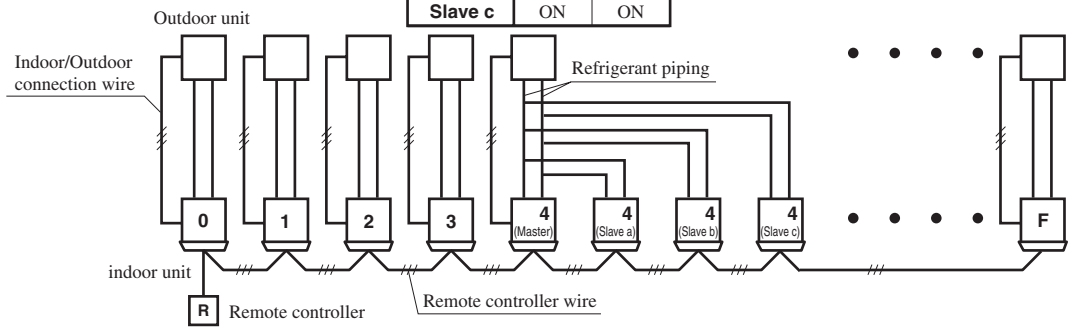
A single remote control switch can be used for group control of multiple units (indoor units - up to 16 units). All indoor units which are connected to the remote controller can be operated/stopped with the selected mode in order of the unit number. The protective control and thermostat control for every indoor unit works independently.

Notes (1)The unit No. is set using SW2 on the indoor unit control PCB, it is necessary to set both unit No. setting and master/slave unit setting. Master/slave unit can be set with SW5. (All indoor units are set as Master at factory setting.)

SW2: Set 0~9 and A~F.
SW5: Set the master unit and slave unit. (See the table at right.)

SW5 setting

Switch / Unit	SW5-1	SW5-2
Master	OFF	OFF
Slave a	OFF	ON
Slave b	ON	OFF
Slave c	ON	ON



(2)It is not necessarily to set the unit No. consecutively, however we recommend to do so in order to avoid duplication.

2) How to display the operation situation

a) Remote or center and heating preparation: The data for the indoor unit, which is in operation set as remote mode (or center mode in case there are no remote mode indoor unit) and has smallest indoor unit No., is indicated.

b) Inspection and filter sign: It is indicated at least one indoor unit has an error or filter sign.

3) Confirmation of connected units

Pressing the "AIR CON No." button on the remote control unit displays the indoor unit address. Pressing the ▲ or ▼ button displays the indoor units in the order of lowest to highest assigned No.

4) Error

a) If an error occurs (protection device activation) with some of the units in the group, those units will have an error stop, but the properly operating units will continue operation.

b) Wiring outline

Install the interconnection wiring between the indoor and outdoor unit as it would be for each unit. Use the terminal block (X, Y, Z) for the remote control for the group controller and use a jumper wire among controllers each of the rooms.

(r) External control (remote display) /control of input signal

1) External control (remote display) output

Following output are provided from the connector (CnT) on the control PCB of indoor unit.

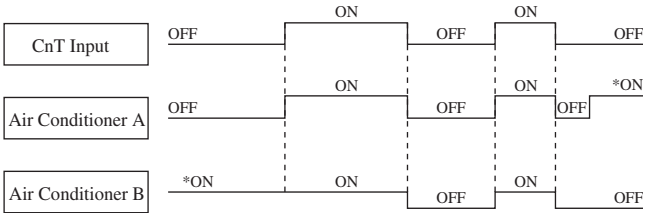
- Operation output: Power to engage DC 12V relay (provided by the customer) is outputted during operation.
- Heating output: Power to engage DC 12V relay (provided by the customer) is outputted during the heating operation.
- Compressor ON output: Power to engage DC 12V relay (provided by the customer) is outputted while the compressor is operating.
- Error output: When any error occurs, the power to engage DC 12V relay (provided by the customer) is outputted.

2) Control of input signal

(Make sure to connect the standard remote control unit. Control of input signal is not available without the standard remote controller.)

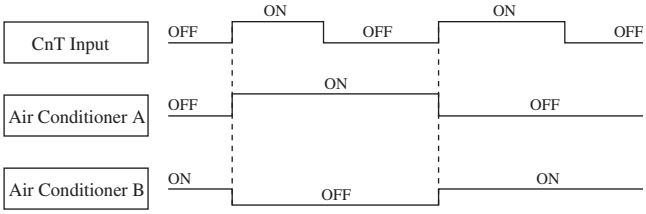
Control of input signal (switch input, timer input) connectors (CnT) are provided on the control PCB of the indoor unit. However, when the operation of air conditioner is under the Center Mode, the remote control by CnT is invalid.

a) At shipping from factory J1 (SW7-1) on PCB is closed (ON).
   - Input signal to CnT OFF → ON [Edge input] ... Air conditioner ON
   - Input signal to CnT ON → OFF [Edge input] ... Air conditioner OFF



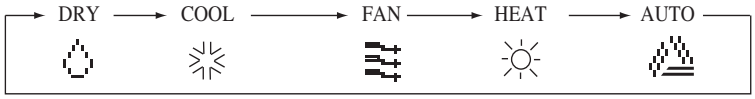
Note (1) The ON at the * mark indicates ON using the remote control switch, etc.

b) When J1 (SW7-1) on the PCB of indoor unit is open (OFF).
Input signal to CnT becomes Valid at OFF → ON only and the motion of air conditioner [ON/OFF] is inverted.



(3) Operation control function by the wired remote controller

(a) Remote controller operation mode switch switching sequence



(b) CPU reset

If the "GRILL" button and "CHECK" button on the remote controller are pressed at the same time, this function is activated. The system will behave as same way as power supply reset.

(c) Power failure compensation function

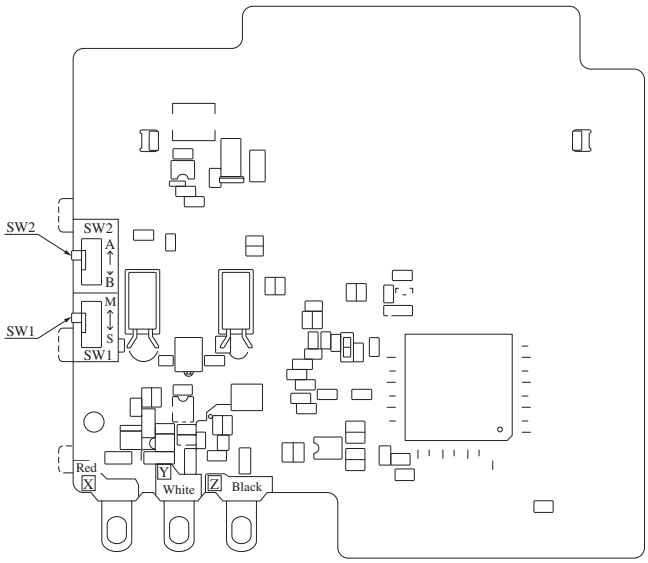
- By setting the remote control functions, setting of the "POWER FAILURE COMPENSATION SETTING" is enabled.
- The remote controller's status is always stored in memory, and after recovering from a power failure, operation is resumed using the memory contents. However, the memory for auto swing louver stopping position is deleted and timer mode is cancelled.

  Operation program on the weekly timer is not deleted and the calender starts from Friday, however, all day are set as holidays when recovered. It means that the weekly timer will not activate unless holiday setting is enabled.
- Contents stored in memory for power failure compensation are as follows.

  Note (1) Items ⑥, ⑦ and ⑧ are stored in memory regardless of whether power failure compensation is enabled or disabled, and the quiet mode setting is cancelled regardless of whether power failure compensation is enabled or disabled.

  ① Run/Stop
  In case the unit is running under the off time timer mode or the simple timer mode when the power failure happens, "stopping" is stored.
  ② Operation mode
  ③ Fan speed mode
  ④ Room temperature setting
  ⑤ Louver auto swing/stop
  However, the stop position (position 4) is cancelled and it becomes the horizontal position (1).
  ⑥ The remote control function item, set in accordance with the remote control setting ("Indoor unit function items" are stored in the indoor unit's memory.)
  ⑦ Upper limit and lower limit values set by temperature setting control.
  ⑧ Weekly timer settings (other timer settings are not stored in memory).

Remote controller PCB parts arrangement



Control select switch (SW1)

Switch		Function
SW1	M	Master remote controller
	S	Slave remote controller

Note (1) SW2 is not normally used, so do not change the selection.

(4) Operation control function by the outdoor controller

♦ **Models FDCVA151 ~ 251**

(a) Deciding the compressor speed

The indoor unit's return air temperature and the set temperature are used to carry out fuzzy calculations, then the required speed is decided. After that compressor speed adjustment by any protection control is taken into account the actual compressor speed is decided.

Unit required speed

1) Dehumidify and cooling operation

Units: rps

Item \ Model	Outdoor unit		
	151	201	251
Maximum required speed	75(70)(1)	95[90](2)	125
Minimum required speed	30	30	40

Note (1) Values in ( ) show for the FDK series.
(2) Values in [ ] show for the FDT, FDK series.

2) Heating operation

Units: rps

Item \ Model	Outdoor unit		
	151	201	251
Maximum required speed	80	95	125
Minimum required speed	30	30	40

(b) Compressor soft start control

1) Compressor protective start I

When conditions are as shown below, carry out compressor protective start **I**.

a) Unit has been stopping for less than 6 hours since previous stop, and this start is the 2nd or subsequent cumulative compressor start since the power was turned ON.
   ① The compressor starts synchronous operation 5 seconds after thermostat ON.
   ② During this control, the compressor speed is gradually increased by 2 rps/30 (40) seconds from the lower limit 30 (40) rps up to the target speed (the upper limit) 64 rps.
   ③ This control is terminated at 3 minutes after the compressor started.

Note (1) Values in ( ) show for the 251 model.

2) Compressor protective start II

If any of the following conditions is satisfied, compressor protective start II is implemented.

a) It has been 6 hours or longer since the power was turned on, and this is the first cumulative compressor start since the power was turned ON.

b) If the compressor is stopped for 6 hours or longer, and this is the second or subsequent cumulative start since the power was turned ON.
   ① The compressor starts synchronous operation 5 seconds after thermostat ON.
   ② The compressor speed is gradually increased by 2 rps/second from the lower limit 30 (40) rps up to the target speed (the upper limit) 64 rps for 30 seconds after the compressor started.
   ③ After the compressor speed reaches the upper limit 64 rps, the compressor speed is decreased by 1 rps/second up to the lower limit 30 (40) rps and is retained at the lower limit speed until 3 minutes passed after the compressor started.
   ④ After the termination of item ③ controlling period, if the required speed is higher than the lower limit 30 (40) rps, the compressor speed is increased again by 6 rps/30 seconds up to the upper limit speed until 6 minutes passed after compressor started. And then this control is terminated.

Units: rps

Model \ Item	Lower limit speed	Upper limit speed
FDCVA151, 201	30	64
FDCVA251	40	64

3) Compressor protective start III

When the following conditions are satisfied, compressor start III is implemented.

a) Less than 6 hours have passed since the power was turned ON, and this is the 1st cumulative compressor start since the power was turned ON.

① The compressor starts synchronous operation 5 seconds after thermostat ON.

② The compressor speed is gradually increased by 2 rps/second from the lower limit 30 (40) rps up to the target speed (the upper limit) 64 rps for 30 seconds after the compressor started.

③ After the compressor speed reaches the upper limit 64 rps, the compressor speed is decreased by 1 rps/second up to the lower limit 30 (40) rps and is retained at the lower limit speed until 3 minutes passed after the compressor started.

④ After the termination of item ③ controlling period, if the required speed is higher than the lower limit 30 (40) rps, the compressor speed is increased again by 6 rps/2 minutes up to the upper limit speed until 11 minutes passed after compressor started. And then this control is terminated.

Units: rps

Item / Model	Lower limit speed	Upper limit speed
FDCVA151, 201	30	64
FDCVA251	40	64

Compressor soft start control

		Started by remote controller after remote controller OFF or solved emergency stop	Thermostat ON start	
			Operation mode is changed after thermostat OFF	Operation mode is unchanged after thermostat OFF
First time of the compressor cumulative start	Less than 6 hours since the power was turned ON	In accordance with the following [conditions]		
	6 hours or longer since the power was turned ON	Protective start II	Protective start II	Protective start II
2nd or subsequent time of the compressor cumulative start	Less than 6 hours since stopping	Protective start I	Protective start I	Protective start I
	6 hours or longer since stopping	Protective start II	Protective start II	Protective start II

[Conditions]

The discharge pipe temperature (Tho-D) and outdoor air temperature (Tho-A) are detected.

- If the discharge pipe temperature (Tho-D) minus the outdoor air temperature (Tho-A) is ≧ 15 degrees, protective start II is implemented.
- If the discharge pipe temperature (Tho-D) minus the outdoor air temperature (Tho-A) is < 15 degrees, protective start III is implemented.

(c) Compressor protective control according to operating speed

1) Compressor protection during high speed operation

When the compressor is operated at speeds exceeding 100 rps for 30 minutes, the compressor speed is adjusted to 100 rps at highest for 3 minutes.

2) Compressor protection during low speed operation

When the compressor is operated at speeds below 26 rps for 60 minutes, the compressor speed is adjusted to 30 rps at lowest for 15 seconds.

(d) Outdoor fan control

(i) Outdoor fan speed is controlled by compressor speed
FDCVA151, 201

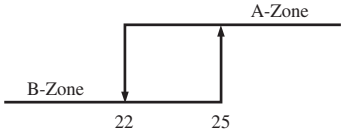
Cooling	Compressor speed (rps)	less than 46	46 to less than 66	66 to less than 80	80 or more
	Outdoor unit fan speed	4th speed (520 rpm)	5th speed (570 rpm)	6th speed (685 rpm)	7th speed (740 rpm)
Heating	Compressor speed (rps)	less than 62	62 to less than 82	82 to less than 92	92 or more
	Outdoor unit fan speed	4th speed (520 rpm)	5th speed (570 rpm)	6th speed (685 rpm)	7th speed (740 rpm)

FDCVA251

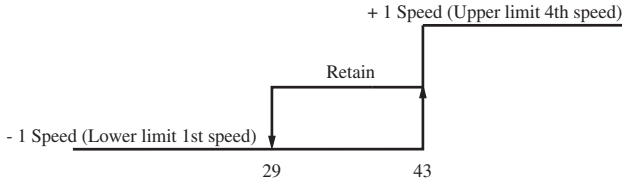
Cooling	Compressor speed (rps)	less than 46	46 to less than 66	66 to less than 80	80 or more
	Outdoor unit fan speed	4th speed (520 rpm)	5th speed (570 rpm)	6th speed (685 rpm)	7th speed (740 rpm)
Heating	Compressor speed (rps)	less than 62	62 to less than 82	82 to less than 104	104 or more
	Outdoor unit fan speed	4th speed (520 rpm)	5th speed (570 rpm)	6th speed (685 rpm)	7th speed (740 rpm)

(ii) Outdoor unit fan speed control

1) Fan speed control during low ambient air temperature cooling
   The outdoor unit's fan is controlled in accordance with the outdoor heat exchanger temperature (detected by Tho-R) and the ambient air temperature (detected by Tho-A).



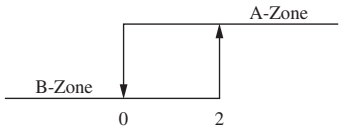
Ambient air temperature (˚C)



Outdoor heat exchanger temperature (˚C)

   a) In case that the ambient temperature is below 22°C (B-zone), the outdoor fan speed is immediately raised to 4th speed and retained for 20 seconds. And then by sampling the outdoor heat exchanger temperature at 20-second intervals, the outdoor fan speed is decided at the appropriate speed between the lower limit (1st speed) and the upper limit (4th speed).
   b) Control is cancelled when it is that the outdoor temperature is in the A-Zone and the outdoor fan tap is running at 3rd speed or higher. However even if the outdoor fan is running at 2nd speed, when the ambient air temperature is 25°C or higher (A-zone) and the outdoor heat exchanger temperature is 43°C or higher, this control is also cancelled.

2) Outdoor unit fan speed control during heating
   a) If the ambient air temperature (detected by Tho-A) is detected in the B-Zone for 5 minutes continuously, the outdoor fan tap is increased by 2 steps and is stepped up repeatedly up to the upper limit (7th speed).
   b) When outdoor temperatue exceeds 17°C, the outdoor unit fan runs at 2nd speed.

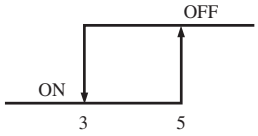


Ambient air temperature (˚C)

3) When the compressor is ON and if the outdoor fan speed is 75 rpm or lower for 30 seconds or longer, the compressor is stopped immediately. 3 minutes after the compressor is stopped, if the thermostat ON conditions are satisfied, the compressor will be restarted.
4) If the condition in item 3) is detected 5 times within 60 minutes after the first detection, an anomalous stop occurs and an error message (E48) is displayed.

(e) Snow protection fan control

If SW5-2 on the outdoor unit PCB is turned ON, a full stop results. In case that the ambient temperature is 3°C or lower during full stop, anomalous stop and/or thermostat OFF, the outdoor fan is forced to run for 10 seconds at 6th speed once every 10 minutes.



Ambient air temperature (˚C)

(f) Defrosting

1) Defrosting start conditions

Defrosting operation starts when all the following conditions are satisfied.

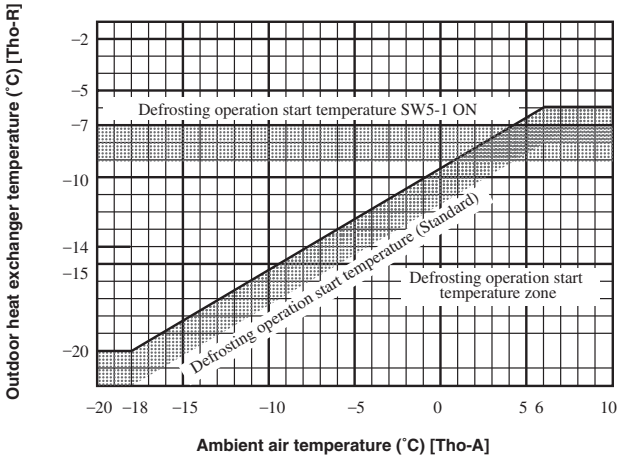
a) If 45 (35) [1] minutes of cumulative compressor operating time have passed since defrosting ended and 30 minutes of cumulative compressor operating time have passed since heating operation started. (Remote controller: ON)

b) 5 minutes passes after the compressor started.

c) 5 minutes passes after the outdoor fan ran.

d) After all the above conditions are satisfied, when the temperature detected by the outdoor heat exchanger temperature thermistor (Tho-R) and ambient air temperature thermistor (Tho-A) drops below the dehumidifying operation start temperature shown in the figure at right for 30 seconds continuously.

Note (1) Values in ( ) show in the case of the 251 model.



2) Procedure to change defrosting start condition

Turn SW5-1 on the outdoor unit PCB ON.

a) When cumulative operating time of compressor elapses 30 minutes or more after the previous defrosting operation ended.

b) When the outdoor heat exchanger temperature (detected by Tho-R) is -7°C or lower for 30 seconds continuously.

c) Other conditions except a) and b) are same as the standard conditions.

3) Defrosting end conditions

When either of following condition is established, the defrosting end operation starts.

a) If 10 minutes [1] have passed since defrosting started.

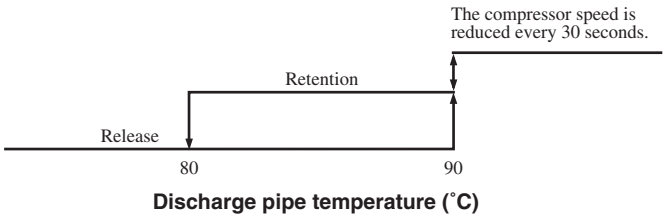
b) If the temperature at the outdoor heat exchanger thermistor (Tho-R) is 12ºC.

(g) Compressor protective control

(i) Discharge pipe temperature control

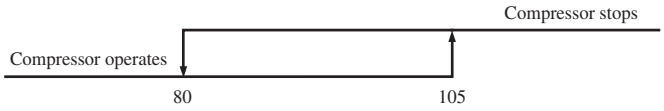
If the discharge pipe temperature (detected by Tho-D) exceeds the set value, the compressor speed is controlled in order to prevent the discharge pipe temperature from rising. If it continues to rise anyway, the compressor is stopped.

1) Compressor speed (Expansion valve) control



2) Anomalous discharge pipe temperature

a) If the discharge pipe temperature rises to 105°C or higher, the compressor is stopped [the outdoor unit fan motor stops 1 minute later. If the temperature drops to 80°C or lower, the compressor restarts automatically.



Discharge pipe temperature (˚C)

b) If the anomalous discharge pipe temperature occurs 2 times in 60 minutes, or continues at 105° or higher for 60 minutes, including the time of compressor stopping, anomalous stop (E36) occurs.

Note (1) If the anomalous discharge pipe temperature continues for 45 minutes from the time it first occurs and does not drop below 80°C, the compressor cannot be operated again.. (It can be reset using the remote control unit.)

(ii) Current safe control

1) If the inverter primary current becomes higher than the set value, the compressor speed is reduced. If the current is still above the set value after the speed is reduced, the speed is reduced again.
2) If the current value drops to the cancellation value continuously for 3 minutes, this control ends and the speed protection cance operation is started.

(iii) High pressure control

1) Heating

a) If the indoor heat exchanger temperature (Thi-R) exceeds the set value mentioned in the following table, the upper limit of compressor speed is reduced within the range of compressor speed mentioned in the following table in order to control high pressure.
If the indoor heat exchanger temperature (Thi-R) detected by every 30 seconds sampling interval still exceeds the set value, the upper limit of compressor speed is adjusted.

Compressor speed (rps)	Indoor heat exchanger temperature (˚C)	
	control set value	cancellation value (˚C)
min. to control range less than 88	57	52
88 to less than 108	52	47
108 or more to max.	47	47

b) In case that the ambient temperature (detected by Tho-A) is 17°C or higher (under heating overload conditions), the upper limit of compressor speed is reduced to 60 rps and the outdoor fan speed is changed to 2nd speed.

2) Cooling

a) If the outdoor heat exchanger temperature (Tho-R) exceeds the set value mentioned in the following table and the ambient temperature (Tho-A) is 41°C or higher, the upper limit of compressor speed is reduced within the range mentioned in the following table and the outdoor fan speed is set to 7th speed in order to reduce high pressure.When the Tho-A becomes less than 40°C, only this fan speed control is cancelled.

Compressor speed (rps)	Outdoor heat exchanger temperature (˚C)	
	control set value	cancellation value (˚C)
min. to control range less than 88	58.5	53.5
88 to less than 108	53.5	48.5
108 or higher to max.	48.5	43.5

b) If the outdoor heat exchanger temperature (Tho-R) exceeds the set value mentioned in the following table, the compressor is stopped. When the Tho-R becomes less than 48°C, compressor restarts automatically.
If this trouble is repeated 5 times within a period of 60 minutes or the Tho-R exceeds the set value for 10 minutes continuously including the time of compressor stopping, anomalous stop (E35) occurs.

Compressor speed (rps)	Outdoor heat exchanger temperature (˚C)
min. to control range less than 88	65 or more
88 to less than 108	60 or more
108 or more to max	55 or more

(h) Inverter protection control

1) Current cut control

This prevents overcurrent at the inverter. If the current exceeds the set value, the compressor is stopped. It restarts automatically 3 minutes later, but if the current is cut 3 times within a period of 20 minutes, an anomalous stop (E42) occurs.

2) Power transistor overheating protection

If the power transistor temperature rises to 82°C or higher, the compressor speed is reduced. If the temperature drops to 77°C or lower, this control is cancelled.

3) Excessive voltage protection control

If the converter voltage exceeds approximately 340V, compressor is stopped. If this anomalous operation is repeated 3 times within a period od 20 minutes or continues 15 minutes continuously, an anomalous stop (E47) occurs.

(i) Temperature thermistor disconnection (discharge pipe, outdoor heat exchanger and ambient air temperature thermistor)

1) Outdoor heat exchanger temperature, ambient air temperature thermistor

If the outdoor heat exchanger temperature thermistor or the ambient air temperature thermiator detects -30°C or lower continuously for 5 seconds during the period from 2 minutes to 2 minutes 20 seconds after the compressor starts, the compressor is stopped. The compressor is restarted after 3 minutes delay, but if this condition is detected 3 times within the period of 40 minutes, an anomalous stop (E37 or E38) occurs.

Note (1) The temperature is not detected during defrosting or for 3 minutes after defrosting is ended.

2) Discharge pipe temperature thermistor

If the discharge pipe temperature thermistor detects -10°C or lower continuously for 5 seconds during the period from 10 minutes to 10 minutes 20 seconds after the compressor starts, the compressor is stopped. The compressor is restarted after 3 minutes delay, but if this condition is detected 3 times within the period of 40 minutes, an anomalous stop (E39) occurs.

Note (1) The temperature is not detected during defrosting or for 3 minutes after defrosting is ended.

3) Power transistor temperature thermistor

If the power transistor temperature thermistor detects -10°C or lower continuously for 5 seconds during the period from 10 minutes to 10 minutes 20 seconds after the compressor starts, the compressor is stopped. The compressor is restarted after 3 minutes delay, but if this condition is detected 3 times within the period of 40 minutes, an anomalous stop occurs.

(j) Silent mode control

If the "Silent Mode Start" signal is received from the remote controller, silent mode operation is started.

• All the required rotations above 100 rps will be set to 100 rps.

(k) Anomalous stop due to starting of the compressor

(a) If the compressor DC motor rotor position detection cannot be executed 5 seconds after compressor starts, compressor stops temporarily. Then 3 minutes later the compressor is restarted to detect rotor position again.

(b) If the position detection cannot be executed the second time, an anomalous stop (E59) occurs.

(l) Compressor rotor lock trouble

If the rotor position cannot be detected after it has been detected once, compressor is stopped. 3 minutes later the compressor is restarted, but if this condition is repeated 4 times within the period of 15 minutes, an anomalous stop (E60) occurs.

(m) Insufficient refrigerant protection control

One minute (for cooling and dehumidifying mode) or 9 minutes (for heating mode) after the compressor is started, if the temperature difference between the indoor heat exchanger temperature (Thi-R) and indoor air inlet temperature (Thi-A) becomes following conditions, the compressor speed is kept 30 rps for 1 minute and is stopped.

1) If the following conditions continue uninterrupted for 1 minute or longer
   - Cooling and dehumidifying mode: (Thi-R) is 4deg or higher than (Thi-A).
   - Heating mode: (Thi-R) is 4deg or lower than (Thi-A).
2) If this condition is repeated 3 times within the period of 30 minutes, an anomalous stop (E57) occurs.

(n) Low voltage protection control

If a power supply voltage of 176 V or lower is detected while the compressor is stopped, or if a power supply voltage of 176 V or lower is detected for 3 minutes during compressor operation, the compressor is stopped.

(o) Test operation

1) It is possible to operate the outdoor unit using SW9 and SW5-4 on the outdoor unit PCB.

SW9	After pressing continuously for 1 second	**SW5-4**	ON	Cooling test operation
			OFF	Heating test operation
		Test operation is ended by pressing SW9 (SW2) during test operation.		

2) Test operation control
   a) Operates the air conditioner at the predetermined maximum speed for each model.
   b) Each protective control and anomalous sensing control is activated.
   c) If SW5-4 is switched back during test operation, stop control is implemented and the cooling and heating operations are toggled.
   d) Remote control unit settings and displays during test operation

Capacity / Mode	Remote control unit settings, display contents
Cooling operation	The initial setting temperature is 5ºC.
Heating operation	The initial setting temperature is 30˚C.

♦ Models FDCVA302 ~ 1002

(a) Deciding the compressor speed

The indoor unit's return air temperature ad the set temperature are used to carry out fuzzy calculations, then the required speed is decided. After that compressor speed adjustment by any protection control is taken into account, the actual compressor speed is decided.

Unit required speed

(i) Dehumidify and cooling operation

Units: rps

Model / Item	Outdoor unit					
	302	**402**	**502**	**602**	**802**	**1002**
Maximum required speed	88	90	105	105	100	120
Minimum required speed	20	40	40	40	30	30

(ii) Heating operation

Units: rps

Model / Item	Outdoor unit					
	302	**402**	**502**	**602**	**802**	**1002**
Maximum required speed	95	90	105	115	100	120
Minimum required speed	20	40	40	40	30	30

(b) Compressor start control

At the point when compressor operating conditions are established, the control in either item (i) or item (ii) is executed.

(i) The first time the compressor starts after the power is turned ON, or when the operating mode is the same as the operating mode the previous time the compressor ran, the compressor starts 5 seconds after the compressor ON conditions are established. However, in the case of models 802 and 1002, the bypass solenoid valve (SV2) goes ON, then the compressor starts 5 seconds later.

(ii) If the mode is changed from the previous operating mode, the 4-way valve is switched 10 seconds after the compressor's ON conditions are established, then 10 seconds after that, the compressor starts. However, in the case of models 802 and 1002, after the 4-way valve switches, the bypass solenoid valve (SV2) goes ON, then 10 seconds after that, the compressor starts.

(c) Compressor soft start control

(i) Compressor protective start I

1) Control conditions
   Normally, in this start pattern, the compressor's operating frequency is increased.
2) Control content
   a) The compressor is started at Arps as target speed. But if outdoor air temperature (Tho-A) is above 35°C in cooling or dehumidifying operation or if indoor suction temperature (Thi-A) is above 25°C in heating operation, the compressor is started at Crps as target speed.

b) After starting for 30 seconds, the compressor will run at fixed frequency within 2~4 minutes with Brps as the target speed.

Model	Operation mode	A rps	B rps	C rps
302	Cooling, dehumidying	42	40	35
	Heating	62	40	40
402 ~ 602	Cooling, dehumidying	55	55	55
	Heating	55	55	55
802, 1002	Cooling, dehumidying	55	55	30
	Heating	55	55	30

(ii) Compressor protective start III

■Model FDCVA302

1) Basic conditions

30 minutes or longer passes after the power is turned on,and this is the 1st cumulative compressor startup time after the power is turned on.

2) Contents of control

The contents and conditions of control are different in accordance with the following cases (A) (B) and (C)

3) Low-speed operation control in cooling and dehumidifying

a) Conditions of control

When the basic conditions and one of the following conditions ① or ② are satisfied, the low-speed operation control in cooling or dehumidifying is implemented.

① When cooling or drying operation mode is selected, and more than 6 hours passes after the power is turn on.

② When cooling or drying operation mode is selected, and the ambient air temperature (Tho-A) is higher than 5°C. (even though less than 6 hours passes after the power is turn on)

b) Contents of control

The compressor is operated at 20 rps for 10 minutes after starting.

4) Forced operation control in heating

a) Conditions of control

When the basic conditions and the following condition ① are satisfied,the forced operation control in heating is implemented.

① When forced heating operation mode is selected, and the ambient temperature is lower than 5°C. (even though less than 6 hours passes after the power is turn on)

b) Contents of control

① The compressor is operated at 42 rps for 10 minutes after starting.

② After the control ① is finished, the compressor is stopped and 3 minutes after stopping, the compressor is restarted in cooling mode for ??? minutes.

③ Then compressor is stopped again, and after 3 minutes stopping, it is restarted and operated at 20 rps for 10 minutes in heating mode.

5) Low-speed operation control in heating

a) Conditions of control

When the basic conditions are satisfied and the heating mode is selected, the low-speed operation control in heating is implemented.

b) Contents of control

The compressor is operated at 42 rps for 10 minutes after starting.

■ **Models FDCVA402~1002**

1) Conditions of control

When the starting times of compressor are accumulated as the first startup after the power breaker is switched ON.

2) Contents of control

Choose the following startup modes according to the conditions of operation mode and ambient temperature (Tho-A).

3) Low-speed operation control in heating and drying

a) Basic conditions

This is the 1st cumulative compressor startup time after the power is turned on.

b) Contents of control

The contents and conditions of control are different in accordance with the following cases (A) and (B)

4) Low-speed operation control in cooling and dehumifying

a) Conditions of control

When the basic conditions are satisfied, the low-speed operation control in cooling or dehumidifying is implemented.

b) Contents of control

① The compressor is operated at the speed of Arps as the target speed.

However when the ambient air temperature (Tho-A) is higher than 35°C, the compressor shall be operated at the speed of Crps.

② 30 seconds after starting, the compressor will be operated at the speed of Brps as the target speed for 10 minutes.

Model	Operation mode	A rps	B rps	C rps
402~602	Cooling, dehumidying	55	55	55
802, 1002	Cooling, dehumidying	55	30	30

5) Low-speed operation control in heating

a) Conditions of control

When the basic conditions and one of following conditions ① or ② are satisfied, the low-speed operation control in heating is implemented.

① 30 minutes passes after the power is turned on.

② When the underdoon temperature (Tho-C) is higher than 4°C and the temperature difference between the ambient air temperature (Tho-A) and Tho-C is greater than 4°C. [for 802 and 1002 models only]

b) Contents of control

① The compressor is operated at the speed of Arps as the target speed.

However when the return air temperature of indoor unit (Thi-A) is higher than 25°C, the compressor shall be operated at the speed of Crps.

② 30 seconds after starting, the compressor will be operated at the speed of Brps as the target speed for 10 minutes.

Model	Operation mode	A rps	B rps	C rps
402~602	Heating	55	55	55
802, 1002	Heating	55	30	30

(d) Outdoor unit fan control

(i) Contents of fan speed control

Unit: min^{-1}

Model / Fan speed	302		402		502, 602		802, 1002			
	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling		Heating	
	FM_{01}	FM_{01}	FM_{01}	FM_{01}	FM_{01}	FM_{01}	FM_{01}	FM_{02}	FM_{01}	FM_{02}
6th speed	850	870	870	870	870	870	910	910	910	910
5th speed	810	760	790(820)	790(820)	790(820)	790(820)	850	850	850	850
4th speed	740	650	740	740	740	740	820	820	820	820
3rd speed	600	500	600	600	600	600	560	560	560	560
2nd speed	400	350	400	400	400	400	370	370	370	370
1st speed	200	200	200	200	200	200	200	200	200	200

Note (1) Values in ( ) show in the case of the 402~602HESAR models.

(ii) Fan speed control when the unit started

1) During heating and defrosting fan control
   a) The outdoor unit's fan is started in 4th speed simultaneously with the start of compressor operation.
   b) After 20 seconds of operation in 4th speed, outdoor fan control in item (iii) is executed.
2) During cooling, dehumidifying
   a) When the ambient air temperature (Tho-A) is 20°C or higher, the outdoor unit fan starts simultaneously with the compressor. The fan operates at 4th speed for 20 seconds, and then outdoor unit fan control in item (iii) is executed. (Normal control)
   b) When the ambient air temperature (Tho-A) is lower than 20°C, the outdoor unit fan starts 10 seconds after the compressor starts. The fan operates at 3rd speed for 20 seconds, and then outdoor unit fan control in item (iii) is executed.
   c) When the ambient temperature (Tho-A) is lower than 10°C, the outdoor unit fan starts 10 seconds after the compressor starts. The fan operates at 2nd speed for 20 seconds, and then outdoor unit fan control in item (iii) is executed. (only case of 302 model)
   d) When the ambient air temperature (Tho-A) is less than –5°C, the outdoor unit fan starts 10 seconds after the compressor starts. The fan operate 1st speed for 20 seconds, and then outdoor unit fan control in items (iii) and (iv) is executed.

(iii) Outdoor unit fan control

1) Fan speed control during cooling and dehumidifying

The fan speed is changed in accordance with the outdoor unit heat exchanger temperature (Tho-R1, R2) and ambient air temperature (Tho-A).

Note (1) Either the Tho-R1 or R2 temperature, whichever temperature is higher (Tho-R2 in models 802 and 1002 only).

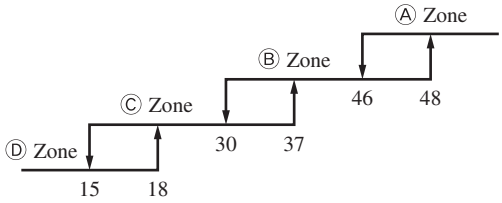
● 302 ~ 602 models

	Ⓐ Zone	Ⓑ Zone	Ⓒ Zone	Ⓓ Zone
ⓐ Zone	5(6)th Speed	6[5]th Speed	5th Speed	4th Speed
ⓑ Zone	5th Speed	5th Speed	4th Speed	3rd Speed
ⓒ Zone	4th Speed	4th Speed	3rd Speed	2nd Speed
ⓓ Zone	3rd Speed	3rd Speed	2nd Speed	1st Speed

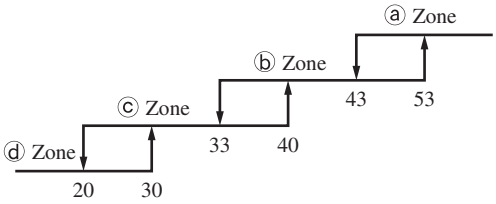
● 802 ~ 1002 models

	Ⓐ Zone	Ⓑ Zone	Ⓒ Zone	Ⓓ Zone
ⓐ Zone	5th Speed	5th Speed	5th Speed	4th Speed
ⓑ Zone	5th Speed	5th Speed	4th Speed	3rd Speed
ⓒ Zone	4th Speed	4th Speed	3rd Speed	2nd Speed
ⓓ Zone	3rd Speed	3rd Speed	2nd Speed	1st Speed

Notes (1) Values in ( ) show in the case of the 302 model.
(2) Values in [ ] show in the case of the 402~602HESAR models.



Ambient air temperature (˚C)



Outdoor heat exchanger temperature (˚C)

2) Fan speed control during heating

The fan speed is changed in accordance with the outdoor unit heat exchanger temperature (Tho-R1, R2) and ambient air temperature (Tho-A).

Note (1) Either the Tho-R1 or R2 temperature, whichever temperature is higher (Tho-R2 in models 802 and 1002 only).

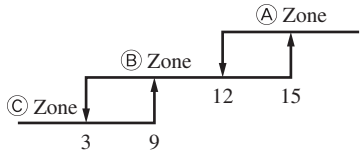
● 302 ~ 602 models

	Ⓐ Zone	Ⓑ Zone	Ⓒ Zone
ⓐ Zone	3rd (2nd) Speed	3rd Speed	4th Speed
ⓑ Zone	3rd Speed	4th Speed	5th Speed
ⓒ Zone	4th Speed	5th Speed	6th Speed

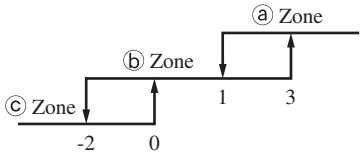
● 802 ~ 1002 models

	Ⓐ Zone	Ⓑ Zone	Ⓒ Zone
ⓐ Zone	3rd Speed	3rd Speed	4th Speed
ⓑ Zone	3rd Speed	4th Speed	5th Speed
ⓒ Zone	4th Speed	5th Speed	6th Speed

Note (1) Values in ( ) show in the case of the 302 model.



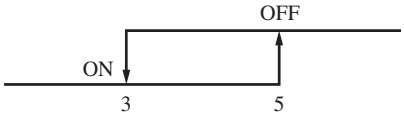
Ambient air temperature (˚C)



Outdoor heat exchanger temperature (˚C)

3) Snow protection fan control

In case the DIP switch (SW3-2) on the outdoor unit control PCB is ON, when in the stop mode or the anomalous stop mode, the outdoor unit fan runs at 4th speed for 30 seconds every ten minutes in accordance with the ambient air temperature (detected by Tho-A).



Ambient air temperature (˚C)

4) Cautions concerning outdoor unit fan start control

In case the fan turns around at 400 min^{-1} or faster in reverse rotation, the fan motor doesn't try to start operation even though the compressor starts in order to avoid breakdown of the fan motor.

5) If the outdoor unit fan motor is sensed to be anomalous

a) If the compressor is ON and the outdoor unit fan motor is turning at 100 min^{-1} or less or is turning in reverse for 30 seconds or longer, the compressor stops instantly. After the compressor is stopped for 3 minutes, if the thermostat's ON conditions are established, the compressor starts.

b) If it is detected 5 times within 60 minutes after the first detection, an anomalous stop (E48) occurs.

6) Outdoor unit fan control by power transistor cooling fan temperature

If all the following conditions are established 3 minutes after the compressor starts, the following control is implemented.

a) Cooling, Dehumidifying

- Ambient air temperature Tho-A ≧ 33°C
- Actual compressor speed ≧ A rps
- Power transistor radiator fin temperature ≧ C°C

b) Heating

- Ambient air temperature Tho-A ≧ 16°C
- Actual compressor speed ≧ B rps
- Power transistor radiator fin temperature ≧ C°C

c) Control contents

i) The outdoor unit fan speed is increased by 1 speed.

ii) When sampling is done once every 60 seconds and the power transistor cooling fan temperature (Tho-P) value is as follows.

① If the power transistor radiator fin temperature (Tho-P) is ≧ C°C, the outdoor unit fan speed increases by 1 speed.

② If C°C > the power transistor radiator fin temperature (Tho-P) ≧ D°C, the current outdoor unit fan speed is maintained.

③ If the power transistor radiator fin temperature (Tho-P) is ≦ D°C, the outdoor unit fan speed is lowered by 1 speed.

d) End conditions

When the conditions in item ③ above and the outdoor unit fan speed determined in item (i) are sensed 2 times in succession.

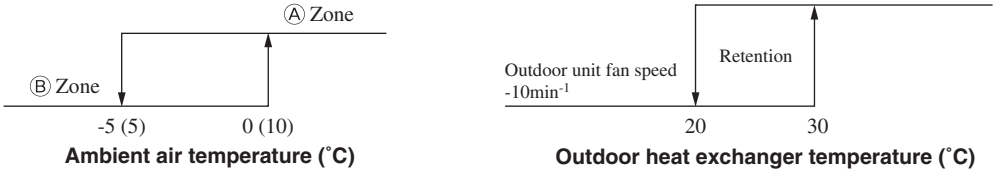
- Compressor speed and power transistor radiator fin temperature

Item / Model	A	B	C	D
302	60	70	80	75
402	70	70	72	68
502	85	85	72	68
602	90	90	80	75
802	70	70	80	75
1002	90	90	80	75

(e) Outdoor unit fan control during cooling when the outdoor air temperature is low

(i) When cooling or dehumidifying, if the ambient air temperature (Tho-A) is in Zone Ⓑ and when the outdoor unit fan has run for 20 seconds since starting and is running at 1st speed, the outdoor unit fan speed is controlled in accordance with the outdoor heat exchanger temperature (Tho-R1, R2).

Note (1) Whichever of the two readings, Tho-R1 or R2, is highest (Tho-R2 is used in models 802 and 1002 only).



Note (1) Values in ( ) show in the case of the 302 model.

(ii) If the rotational speed in changed, the speed is held constant for 20 seconds, then if the conditions in (i) exist after 20 seconds, the speed is changed again.

- Speed lower limit: 130 rpm
- Speed upper limit: 400 (500) rpm

Note (1) Values in ( ) show in the case of the 302 model.

(iii) If any of the following conditions is established, this control ends and the fan runs at the fan speed set in item (d). (iii).

1) The ambient air temperature (Tho-A) is in Zone Ⓐ and the outdoor heat exchanger temperature (Tho-R1, R2) is detected to be 30°C or higher continuously for 40 seconds or longer.
2) The outdoor unit fan speed is 400 (500) min^{-1}, and the outdoor heat exchanger temperature (Tho-R1, R2) is detected to be 30°C or higher continuously for 40 seconds or longer.

   Note (1) Values in ( ) show in the case of the 302 model.
3) The outdoor heat exchanger temperature (Tho-R1, R2) is detected to be 45°C or higher continuously for 40 seconds or longer.

(f) Defrosting

(i) Defrosting start conditions

If all the following defrosting conditions A or B are satisfied, defrosting operation starts.

1) Defrosting conditions A

a) When cumulative operating time of the compressor elapses 45 minutes or more after the previous defrosting operation ends, or 30 minutes or more after the heating operation starts (with pressing RUN button on the remote controller).

b) 5 minutes passes after the compressor goes ON.

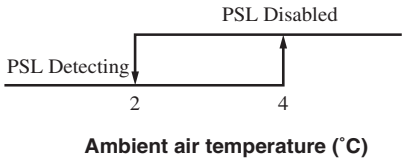
c) 5 minutes passes after the outdoor unit fan runs.

d) When either of the following condition is established;

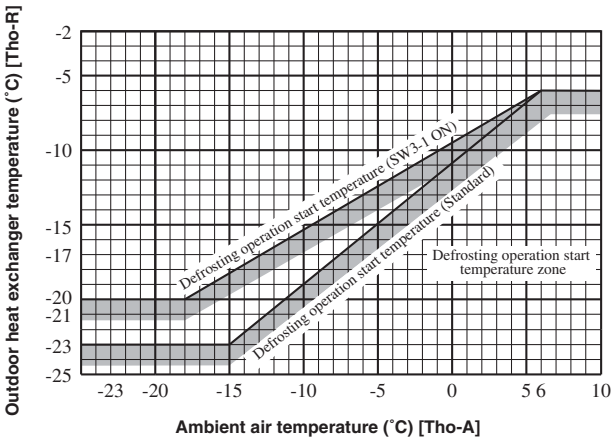
1)When the relation between the outdoor heat exchanger temperature (Tho-R1 or R2, whichever lower) and ambient air temperature (Tho-A) is in the defrosting operation start temperature zone for continuous 15 seconds, or.

2)When the relation between the suction gas suturated temperature (SST) and ambient air temperature (Tho-A) is in the zone for 3 minutes. However, under the following condition this judgment is not done.

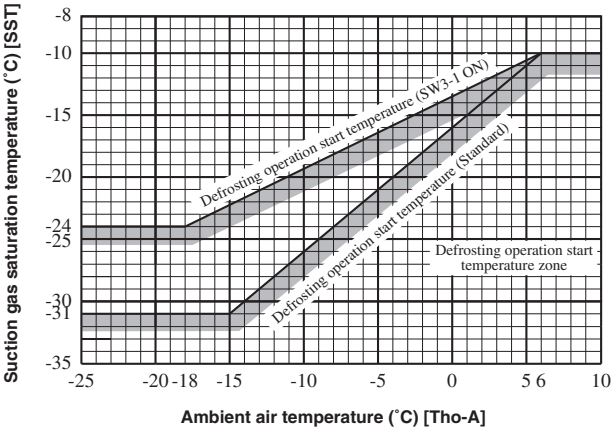
a) Less than 10 minutes have passed since the compressor starts.



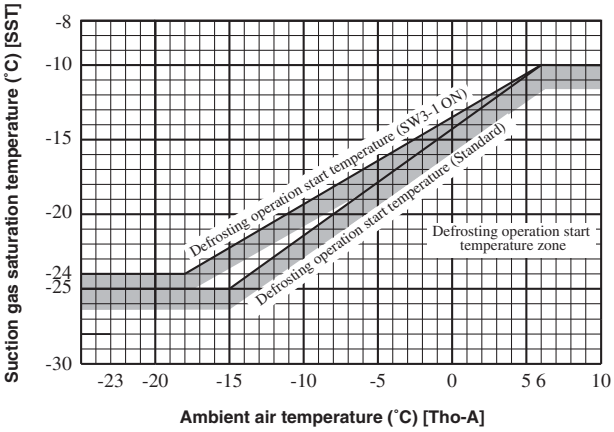
Model FDCVA 302~1002



Model FDCVA 302



Models FDCVA 402~1002



2) Defrosting conditions B

a) When cumulative operating time of the compressor elapses 30 minutes in case the previous defrosting operation is finished with the condition 1), defrosting operation time being up.

b) 5 minutes have passed since the compressor started.

c) 5 minutes have passed since the outdoor unit's fan started running.

(ii) Changing the defrosting start temperature

When the DIP switch (SW3-1) on the outdoor unit control PCB is turned on, the following condition is changed.

1) When cumulative operating time of the compressor elapses 30 minutes or more instead of 45 minutes after the previous defrosting operation ends.

2) When cumulative operating time of the compressor elapses 25 minutes instead of 30 minutes in case the previous defrosting operation is finished with the condition 1), defrosting operation time being up.

3) Defrosting operation starting zone is changed as shown on the graph on the previous page.

4) Besides items 1), 2), and 3), other conditions are the same as the standard conditions.

(iii) Defrosting end conditions

If any of the following conditions is satisfied, the defrosting operation finishes.

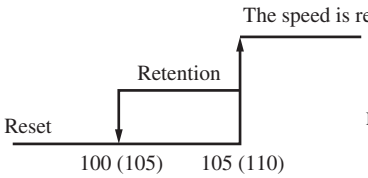
1) 8 minutes and 20 seconds have passed since defrosting started. (In models 302, 802 and 1002, 10 minutes and 20 seconds have passed.)
2) When the outdoor heat exchanger temperature (sensed by Tho-R1, R2, whichever one senses the lower temperature) is 12°C or higher continuously for 10 seconds.

(g) Compressor protective control

(i) Discharge pipe temperature control

If the dischage pipe temperature (Tho-D) becomes higher than the set temperature during compressor operation, the compressor speed is reduced to cool it down.

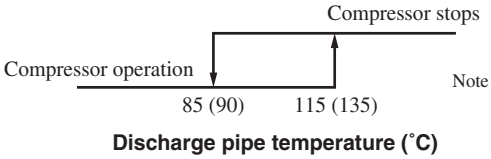
1) Compressor speed control



Note (1) Values in the bracket show the one for 802 and 1002 models

2) Anomalous stop by the discharge pipe temperature

a) If the discharge pipe temperature has risen to 115 (135) °C or higher, the compressor is stopped. If it drops to 85 (90) °C or lower, the compressor restarts automatically.



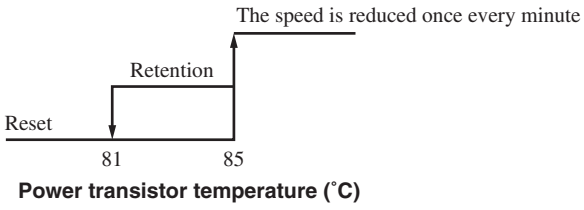
Note (1) Values in the bracket show the one for 802 and 1002 models

b) If the condition a) occurs 2 times within 60 minutes, or the temperature is kept at 115 (135)°C or higher for 60 minutes continuously, anomalous stop (E36) occurs.

Note (1) If the temperature does not drop to 85 (90) °C or lower continuously for 45 minutes after a discharge pipe temperature error occurs, operation cannot be restarted. (This can be set using the remote controller.)

(ii) Power transistor temperature control

If the power transistor temperature (Tho-TR) rises to 85°C or higher, the compressor speed is controlled. If the power transistor temperature drops to 81°C or lower, this control ends and the speed protection cancel operation starts.



(iii) Current safe control

1) If the inverter primary current (CT current) becomes higher than the following set value, the compressor speed is reduced. If the current is still above the set value after the speed is reduced, the speed is reduced again.

Model	Set value (A)
302	15
402, 502, 602	23
802	17
1002	20

2) If the current value drops to the cancellation value continuously for 3 minutes, this control is ended and the speed protection cancel operation is started.

(iv) High pressure control

1) Compressor speed control during heating

If the indoor heat exchanger temperature (ThI-R1, 2, whichever higher) exceeds the set value and if the compressor speed is faster than the set value mentioned in the following table, compressor speed is reduced to drop the high pressure.

Item \ Model	302	402 ~ 602	802, 1002
Compressor rotational speed (rps)	20	40	30
Indoor heat exchanger temp (˚C)	52 ~ 58	52 ~ 58	52 ~ 58

2) Compressor speed control during cooling

If the outdoor heat exchanger temperature (Tho-R1, R2, whichever higher) exceeds the set value and if the compressor speed is faster than the set value mentioned in the following table, compressor speed is reduced to drop the high pressure.

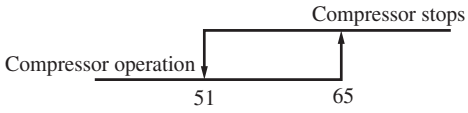
Item \ Model	302	402 ~ 602	802, 1002
Compressor rotational speed (rps)	20	40	30
Outdoor heat exchanger temp (˚C)	52 ~ 58	52 ~ 58	54 ~ 60

3) Operation stop control according to indoor heat exchanger temperature

If an indoor heat exchanger temperature (detected by ThI-R1, R2) of 65°C or higher is detected continuously for 2 seconds during compressor operation in the heating mode, the compressor's speed is controlled. If the indoor heat exchanger's temperature drops to 47°C or lower, this control ends.

4) Control according to the outdoor heat exchanger temperature

a) If an outdoor heat exchanger temperature (detected by Tho-R1, R2) that is higher than the set value is detected, during compressor operation in the cooling mode, the compressor is stopped. When the temperature drops to or below the set value, compressor operation resumes automatically.



Outdoor heat exchanger temperature (˚C)

b) If the outdoor heat exchanger temperature exceeds the set value 5 times within a period of 60 minutes or continuously for 60 minutes even when the compressor is stopped, an anomalous stop, (E35) occurs.

Note (1) If an outdoor heat exchanger temperature anomalous stop occurs and the temperature does not drop to 51ºC or lower for 3 minutes continuously, operation cannot be resumed.

5) Anomalous detected by the high pressure switch (63H1)

If the pressure rises and the high pressure switch (4.15 open/3.15 closed MPa) operates (opens) 5 times within 60 minutes or operates (remains open) continuously for 60 minutes even when the compressor is stopped, an anomalous stop (E40) occurs.

(v) Low pressure control [LPT]

1) Compressor speed protective control

a) If all the following conditions are satisfied 5 minutes or more after the compressor starts or after a defrost reset, the compressor speed is lowered.

① If the low pressure is 0.15 MPa or lower continuously for 10 seconds.

② If the compressor speed is 20 rps or higher (for model 302), 40 rps or higher (for models 402 ~ 602) or 30 rps or higher (for models 802, 1002).

b) The low pressure is detected again 30 seconds later, and if it is lower than 0.15 MPa, the compressor speed is lowered again.

c) If the low pressure becomes 0.189 MPa or higher, this control ends.

2) Low pressure error detection
   a) If either of the following conditions is satisfied, the compressor is stopped.
      ① If the low pressure is 0.079 MPa or lower continuously for 15 seconds after the compressor starts.
      ② If the low pressure is 0.15 MPa after 10 minutes have passed since the compressor started and superheating at 30°C continues for 60 seconds.
   b) Operation resumes automatically when the low pressure becomes 0.227 MPa or higher.
   c) If the conditions in ① or ② of item a) above occur 3 times within 60 minutes or if the low pressure drops to 0.079 MPa or lower for 5 minutes or longer continuously, including when the compressor is stopped, an anomalous stop (E49) occurs.

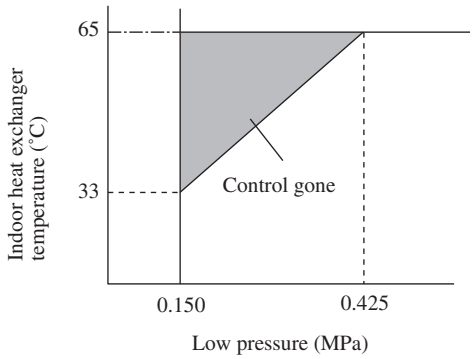
(vi) High compression ratio protection control

During a heating operation, the compressor speed is controlled in accordance with the low pressure (PSL) and indoor heat exchanger temperature (ThI-R1, R2).

1) Start conditions

When all the following conditions are satisfied

   a) 10 minutes have passed since the compressor started.
   b) The outdoor unit fan is ON and 10 minutes have passed since the outdoor unit fan started.
   c) 10 minutes have passed since defrosting ended.
   d) When the low pressure and indoor heat exchanger temperature detected values are within the control gone shown in the following figure for 30 seconds.



   e) The compressor speed exceeds 40 rps (for models 402-602) or 30 rps (for models 802, 1002) in heating operation except defrost operation.

2) Control contents

The compressor's speed is lowered. 1 minute later, detection is repeated and if the conditions in item d) continue to exist, the speed is lowered still further.

3) End conditions

When operation is outside the control region shown in item d) above for 6 minutes continuously.

(h) Inverter protection control

(i) Current cut control

This prevents overcurrent at the inverter. If the current exceeds the set value, the compressor stops. It restarts automatically 3 minutes later, but if the current is cut 4 times within a period of 30 minutes, an anomalous stop (E42) occurs.

(ii) Power transistor overheating protection

1) If the power transistor temperature rises to 110°C or higher, the compressor stops. If the temperature drops to 90ºC or lower after 3 minutes, the compressor restarts automatically.
2) If this operation is repeated 5 times within 60 minutes (E41), or the temperature rises to 110°C or higher for 15 minutes (E51) continuously, an anomalous stop occurs.

Note (1) The anomalous stop (E41) occurs in models 802 and 1002 only.

(i) Open phase protection

If the voltage of either the L1, L2 or L3 phase (3 phase models) or the L1-N phase (1 phase models) is 0 V for 5 seconds continuously after the power is turned ON, it is judged that there is an open phase state in the power supply, and 1 second later, an anomalous stop (E34) occurs.

(j) Temperature thermistor (outdoor heat exchanger, ambient air, discharge pipe, suction pipe, under-dome) and low pressure sensor disconnection

(i) Outdoor heat exchanger temperature thermistor, ambient air temperature thermistor, low pressure sensor

If the conditions on the following page are detected for 5 seconds continuously between 2 minutes to 2 minutes 20 seconds after the compressor goes ON, the compressor stops. After a 3-minute delay, the compressor is restarted, but if this state is detected 3 times within a 40-minute period, an anomalous stop occurs.

Note (1) This is not detected during defrosting and for 3 minutes after defrosting.

● Outdoor heat exchanger thermistor : -50°C or lower
● Ambient air temperature thermistor : -30°C or lower
● Low pressure sensor: 0 V or lower, or 3.49 V or higher.

(ii) Discharge pipe temperature thermistor, suction pipe temperature thermistor, under-dome temperature thermistor. (models 802, 1002 only)

After the compressor goes ON, if the following is detected for 5 seconds continuously between 10 minutes and 10 minutes 20 seconds after the compressor goes ON, the compressor stops. After a 3-minute delay, the compressor is restarted, but if this state is detected 3 times within a 40-minute period, an anomalous stop occurs.

Note (1) This is not detected during defrosting and for 3 minutes after defrosting.

● Discharge pipe temperature thermistor: -10°C or lower
● Suction pipe temperature thermistor: -50°C or lower
● Under-dome temperature thermistor: -50°C or lower

(k) Test operation

(i) It is possible to operate the outdoor unit using SW3-3 (SW5-3) and SW3-4 (SW5-4) on the outdoor unit PCB.

SW3-3 (SW5-3)	ON	**SW3-4 (SW5-4)**	OFF	Cooling test operation
			ON	Heating test operation
	OFF	Normal or test operation end		

Be sure to turn SW3-3 (SW5-3) OFF when operation ends.

(ii) Test operation control

1) The air conditioner is operated at the predetermined maximum speed for each model.
2) Each protective control and anomalous sensing control is activated.
3) If the setting of SW3-4 (SW5-4) is changed during test operation, and the compressor is stopped temporarily, and operation mode is switched between cooling and heating.
4) Set point and indication on the remote controller follows the below table.

Item / Mode	Set point	Indication
Cooling test operation	5ºC	TEST RUN
Heating test operation	30ºC	30ºC

Note (1) Values in ( ) show in the case of the 302 model.

(i) Silent mode control

Silent operation in done according to the remote control function setting.

(i) Fan speed is reduced in comparison with normal operation mode specified in item.

1) Fan speed during cooling and dehumidifying operation.

● 302 ~ 602 models

	Ⓐ Zone	Ⓑ Zone	Ⓒ Zone	Ⓓ Zone
ⓐ Zone	5(6)th Speed	5th Speed	5th Speed	4th Speed
ⓑ Zone	5th Speed	5th Speed	3rd Speed	3rd Speed
ⓒ Zone	4th Speed	3rd Speed	3rd Speed	2nd Speed
ⓓ Zone	3rd Speed	3rd Speed	2nd Speed	1st Speed

● 802 ~ 1002 models

	Ⓐ Zone	Ⓑ Zone	Ⓒ Zone	Ⓓ Zone
ⓐ Zone	5th Speed	5th Speed	5th Speed	4th Speed
ⓑ Zone	5th Speed	5th Speed	3rd Speed	3rd Speed
ⓒ Zone	4th Speed	3rd Speed	3rd Speed	2nd Speed
ⓓ Zone	3rd Speed	3rd Speed	2nd Speed	1st Speed

Note (1) Values in ( ) show in the case of the 302 model.

2) Fan speed during heating

● 302 ~ 602 models

	Ⓐ Zone	Ⓑ Zone	Ⓒ Zone
ⓐ Zone	3rd Speed	3rd Speed	3rd Speed
ⓑ Zone	3rd Speed	3rd Speed	5th Speed
ⓒ Zone	4th Speed	5th Speed	6th Speed

● 802 ~ 1002 models

	Ⓐ Zone	Ⓑ Zone	Ⓒ Zone
ⓐ Zone	3rd Speed	3rd Speed	3rd Speed
ⓑ Zone	3rd Speed	3rd Speed	5th Speed
ⓒ Zone	4th Speed	5th Speed	6th Speed

(ii) Maximum compressor speed is limited as mentioned in the following table.

(rps)

Model / Mode	302	402	502	602	802	1002
cooling	76	60	80	85	70	80
heating	86	60	80	85	70	80

(m) Pump down control

If the pump down button SW1 (SW9) is kept on pressing for 2 seconds during an operation stop and anomalous stop (not including when the thermostat is OFF), pump down operation starts. (It is disabled during indoor unit operation. It is enabled during an anomalous stop of the indoor unit and during power OFF.)

Make sure the service valve on the liquid line is closed before starting pump down operation. (Leave the gas side fully open.)

(i) Control contents

1) Compressor starts with cooling mode and the target speed at 55[62] rps.
2) The red and green indicators (LED) on the outdoor unit control PCB keeps flashing.
3) Except for low pressure control, each protective and anomalous sensing control is enabled.
4) The outdoor fan is controlled the same as normal.
5) The electronic expansion valve (cooling, heating) is fully opened.
6) The oil bypass valve (SV2) or solenoid valve (SV1: Model 302) is open for 2 minutes after the pump down operation starts and after that, it closed.

Note (1) Valves in [ ] show in the case of the 302 model.

(ii) Control end conditions

Stop control is executed according to any of the following conditions.

1) A low pressure of 0.087 MPa or lower is detected continuously for 5 seconds.
   ⓐ Red LED: Lights continuously, Green LED: Keeps flashing, Remote controller: displays stopped.
   ⓑ Restarting is possible when low pressure exceeds 0.087 MPa.
   ⓒ The electronic expansion valves (cooling, heating) remain fully open.
2) Stop according to error detection control.
   ⓐ Red LED: Lights continuously, Green LED: Keeps flashing.
   ⓑ Restarting is not possible. ordinary operation is restored by resetting the power supply.
   ⓒ The electronic expansion valves (cooling, heating) remain fully open.
3) When the cumulative compressor operating time by pump down control is 5 minutes.
   ⓐ Red LED: Stays OFF, Green LED: Keeps flashing, Remote controller: Stop.
   ⓑ Re-pump down operation is possible.
   ⓒ The electronic expansion valves (cooling, heating) remain fully open.

Note (1) Close the gas side operating valve after the compressor stops.

Caution: If the pump down switch is pressed, communications with the indoor units is cancelled, so the message "communications error – E5" is displayed on the indoor unit and the remote controller, but there is no error.

(n) Abnormal stop by failing in starting the compressor (Models 402 ~ 1002 only)

(i) If the unit cannot switch to compressor DC motor rotor position detection operation 5 seconds after compressor start conditions are established, it enters a pause state, then after 3 minutes, the compressor is started again.

(ii) If switching to position detection operation cannot be done a second time, an anomalous stop (E59) occurs due to a compressor start error.

(o) Compressor rotor lock error (Models 802, 1002 only)

Auto restart occurs 3 minutes later, but if this occurs 4 times in 15 minutes, an anomalous stop (E60) occurs.

1.5 APPLICATION DATA

SAFETY PRECAUTIONS

- Please read these "Safety Precautions" first then accurately execute the installation work.
- Though the precautionary points indicated herein are divided under two headings, ⚠WARNING and ⚠CAUTION, those points which are related to the strong possibility of an installation done in error resulting in death or serious injury are listed in the ⚠WARNING section. However, there is also a possibility of serious consequences in relationship to the points listed in the ⚠CAUTION section as well.
  In either case, important safety related information is indicated, so by all means, properly observe all that is mentioned.
- After completing the installation, along with confirming that no anomalies were seen from the operation tests, please explain operating methods as well as maintenance methods to the user (customer) of this equipment, based on the owner's manual.
  Moreover, ask the customer to keep this sheet together with the owner's manual.

⚠ WARNING

- Installation should be performed by the dealer or a company speciallizing in this type of installarion. If you install the equipment yourself, installation errors could result in water leaks, electric shock, and/or a fire, as well as other hazards.
- Conduct installation work in accordance with the instructions in this installation manual. Installation errors could result in water leaks, electric shock, or fire.
- Rig the unit at the specified points with ropes properly rated for the weight in liftting it for portage. An improper manner of portage can result in a fail of the unit resulting in an accident invoiving personal death or injury.
- When installing a unit in a small rooms, take measure so that if the refrigerant leaks, it does not exceed the concentration limit. For information regarding measures to prevent the concentration limit from being exceed, please contact the dealer.
- It refrigerant leaks and the concentration limit is exceeded, suffocation could occur.
- Install the equipment in a location that can sufficiently support the weight of the equipment. If the area is not strong enough, an accident could result from the unit falling.
- Install the equipment in a location that can withstand strong winds, such as typhoons, and earthquakes. If the installation is not secure, an accident could result from the unit falling.
- Always turn off power before work is performed inside the unit such as for installation or servicing. A failure to observe this instruction can cause a danger or electric shock.
- Electrical work should be done by a licensed electrician who shall do the work in accordance with the Technical Standards Regarding Electrical Equipment. Indoor Wiring Provisions, and this installation manual. The electrician shall use specified circuits for the equipment. If the power supply circuit capacity is insuficient or the work is not done correcty, it could result in electric shock or a fire.
- For wiring, the specified cable should be used, the connections should be secure, and the fixtures shall be strong enough to prevent cables from being pulled out from the terminal connections. Incorrect connections or work fixtures could result in heat generation or a fire.
- In cabling, arrange cables suitably so that they may not get off their support and then fix the service panel securely. Improper installation can cause heat generation and a resultant fire. Please prevent any substance other than the specified refrigerant (R410A) such as air from entering the refrigerant cycle in installing or moving the air conditioning system. Contamination by air or a foreign substance can cause an abnormal pressure build-up inside the refrigerant cycle and a resultant explosion and personaly injury.
- Use only parts supplied with the unit and specified supply parts for installation. The use of unauthorized parts may cause the leaking of water or electricitly causing a danger of electric shock or a fire, a refrigerant leak, performance degradation, and control failures.
- Do not open operation valves (either liquid or gas or both) until refrigerant piping, an air-tightness test and an air purge are completed. When a leak of refrigerant gas occurs during piping work, stop brazing pipes and ventilate the room. Refrigerant gas, when it comes into contact with bare fire, can generate a toxic gas.
- When installation is completed, check for refrigerant gas leaks. If the refrigerant gas leaks indoors, it could come in contact with a tan heater, burner, or hot plate, which could generate a poisonous gas.

⚠ CAUTION

- Ground the equipment. Do not connect the ground wire to gas piping, water piping, a lightning rod, or telephone ground wires. It grounding is not performed correctly electric shock could occur.
- Depending on the installation location, a circuit breaker may need to be installed. It a circuit breaker is not installed, electric shock may occur.
- Please follow this manual faithfully in performing installation work. Improper installation work can cause abnormal vibrations and noise generation.
- Do not install the equipment in areas where there is danger of flammable gas leaks. It such gas does leak it could collect around the units and cause a fire.
- Install the drain piping in accordance with the installation manual so that it properly discharges waste water and is maintained at a temperature that prevents condensation.
- Do not install the outdoor unit where winds from its fan blow directly onto a plant, etc. Winds can affect adversely to the plant, etc.
- Secure a space for inspection and maintenance as specified in the manual. An insufficient space can result in an accident such as a fall from the installation point and a resultant personal injury.
- When the outdoor unit is installed on a roof or at an elevated point, provide permanent ladders and handrails along the access route and fences and handrails around the outdoor unit.
- In tightening a flare nut, use a double spanner and observe the specified tightening torque. Care must be taken so as not to over-tighten a nut and damage the flare part. (Please refer to the tightening torque) The loosening or damage of the flare part can cause a refrigerant gas leak and a resultant lack-of-oxygen accident.
- Please dress the refrigerant piping with a heat insulation material for prevention of dew condensation. Improper heat insulation for prevention of dew condensation can cause the leaking or dripping of water and a resultant soaking of household effects.
- When refrigerant piping is completed, check its air-tighteness with nitrogen gas to make sure it does not have a leak. A leak of refrigerant gas in a narrow room beyond the safety limit concentration can cause a lack-of oxygen accident.

1.5.1 Installation of indoor unit

(1) Ceiling recessed compact type (FDTC)

(a) Selection of installation location

1) Select location where the space above ceiling is larger than those mentioned below and perfect draining can be assured.
2) With the customer's consent, select a location with following suitable conditions.
   a) Where cool air or hot air can easily pass through.
      If the height of the location exceeds 3 m, hot air will gather in the ceiling. Suggest to the customer to also install a circulator.
   b) Where water can be completely drained. A sloping location for drainage.
   c) Where there are no wind disturbances to the suction inlet and blowing outlet, where the fire alarm will not be set off erroneosly, where no short circuits occur.
   d) Where there is no direct sunlight.
   e) Please with the environmental dew-point temperature is lower than 28ºC and the relative humidity is less than 80%.

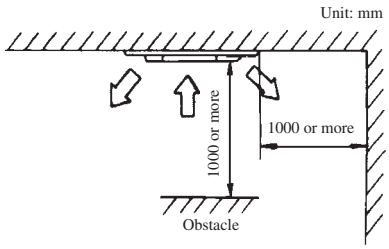
   (This unit is tested under ISO installation conditions to make sure that there are no defects. However, if it is operated under conditions of high humidity that exceed the conditions above, there is danger of condensate falling from the unit. If there is a possibility that the unit will be used under such conditions, dress 10~20 mm of insulation on the entire unit body, the piping and drain pipe.)

3) Consider the supporting strength of the location. If the strength is not sufficient to sustain the unit weight, use reinforcing materials.

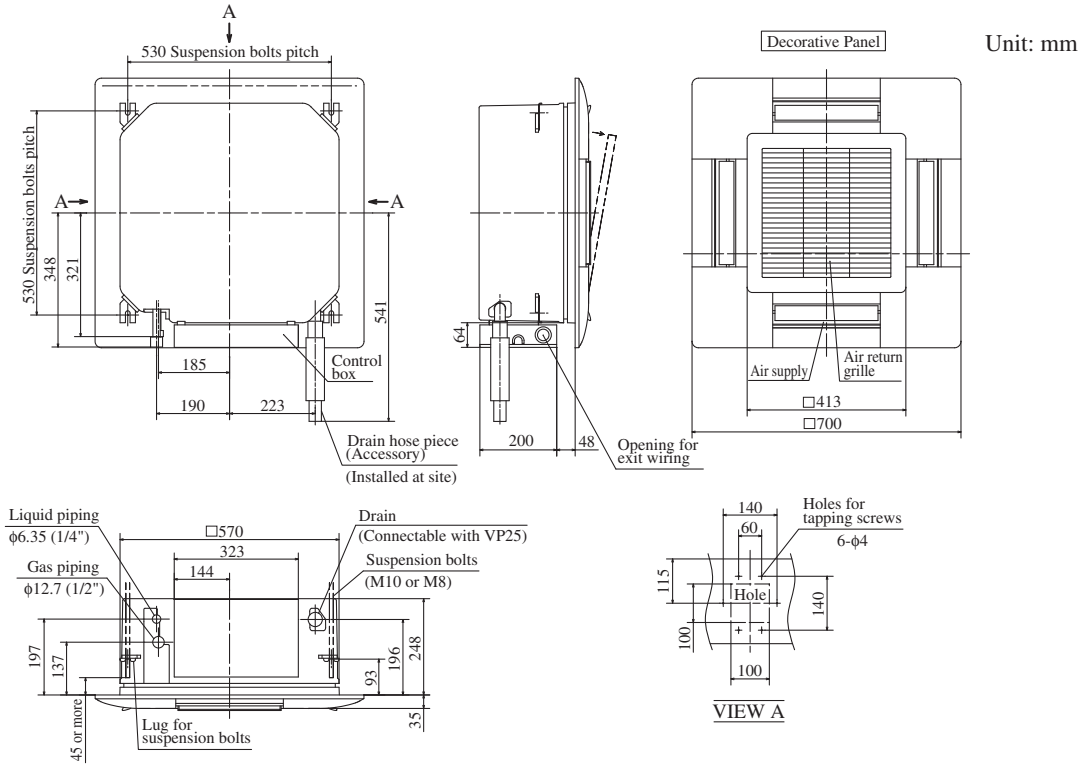
(b) Installation space for unit

a) When a sufficient interval cannot be secured between the unit and a wall or another unit, shut up diffusers on that side to block winds and make sure that no short-circuiting is occurring. (A wind blocking material is available as an optional part)
   • Do not use the unit in the "Lo" wind mode, when winds are blown into two or three directions.

• Installtation space



Note (1) If you are mounting units close together, leave a space of 4000 or greater between unit.

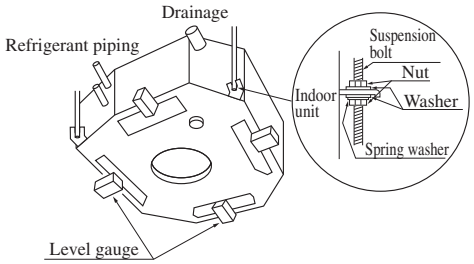


(c) Suspension

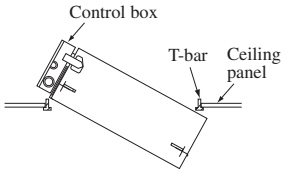
- Please arrange four sets of a suspension bolt (M10 or M8), a nut matching the bolt, a flat washers and a spring washer on the installation site.

(i) When suspension from the ceiling

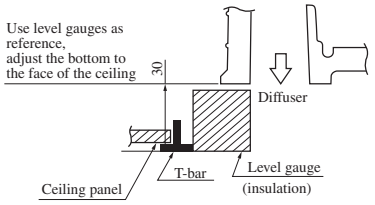
1) This unit is designed for installation on a 2 × 2 grid ceiling.
   If necessary, please detach the T bar temporarily before you install it.
   (When it is installed on a ceiling other than 2 × 2 grid ceiling, please do not fail to provide an inspection port on the control box side.)
2) Determine the positions of suspension bolts (530 × 530).
3) Use four suspension bolts, each fastened in such a manner that it can withstand pull force of 50kgf.
4) Make suspension bolts to the length that leaves approximately 45mm of them above the ceiling. In hoisting the unit main body in, temporarily fasten the four lower nuts of the suspension bolts approx. 93 mm from the ceiling and the four upper nuts at positions sufficiently far from the lower nuts so that they may not hamper installation work when the unit is hoisted in or the height is adjusted.

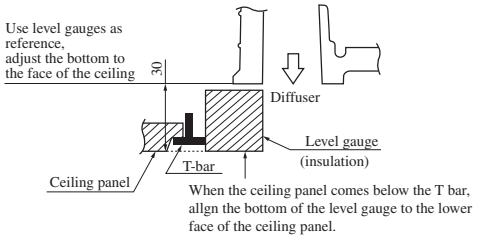


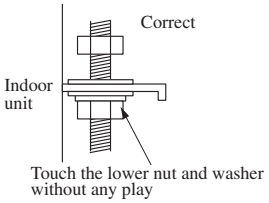
5) Put in the unit on an angle.

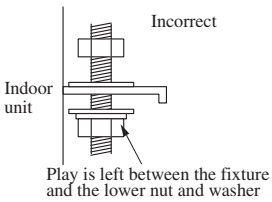


6) After hoisting in the unit, attach level gauges supplied as accessories and determine the unit position (height). To adjust height, use the four lower nuts with the four upper nuts left loose. Please make sure that the unit's four hanging fixtures touch the four lower nuts and washers evenly without any play.

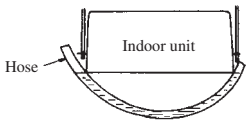



Use level gauges as reference, adjust the bottom to the face of the ceiling
30
Diffuser
Level gauge (insulation)
T-bar
Ceiling panel
When the ceiling panel comes below the T bar, allgn the bottom of the level gauge to the lower face of the ceiling panel.





7) Please make sure that the unit main body is installed levelly. Level must be checked with a level or a clear hose filled with water. (A tolerable height difference at an end of the unit is eithin 3 mm)



8) After you have adjusted the height and level of the unit, fasten the four upper nuts to fix the unit.

Note (1) Do not adjust the height with the upper nuts. It may cause deformation due to excessive force working on the unit main body, which can result in such problems that you cannot attach the panel or noises are generated from the interfering fan.

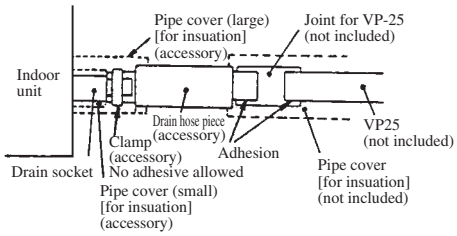
(ii) When embedded into ceiling

1) Determine the positions of hanging bolts (530 × 530).
   - The pitch center of a suspension bolt must accord with the center of the unit.
2) Use four suspension bolts, each fastened in such a manner that it can withstand pull force of 50 kgf.
3) Fix the unit as per (i) 6) and 8) above.

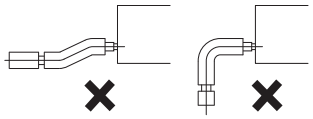
Note (1): When a suspension bolt exceeds 1.3 m in length, use an M10 bolt and give it reinforcements such as braces.

(d) Drain Piping

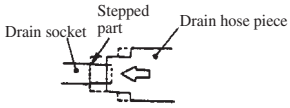
1) Glue the drain hose supplied as an accessory and a VP-25 joint before lifting the unit.
2) The drain hose is to provide a buffer to absorb a slight dislocation of the unit or the drain piping during installation work. If it is subject to abuse such as being bent or pulled deliberately, it may break, which will result in a water leak.



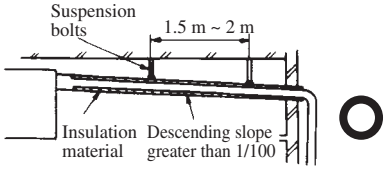
3) Care must be taken so as not to allow an adhesive to run into the drain hose. When it is hardened, it can cause a breakage of a flexible part, if the flexible part receives stress.

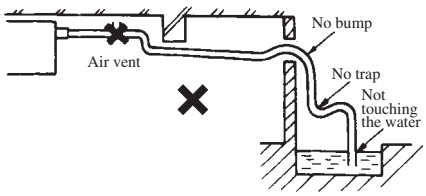


4) Use VP-25 general-purpose hard PVC pipes for drain piping.
5) Insert the drain hose supplied as an accessory (soft PVC end) to the stepped part of the unit's drain socket and then fasten it with the clamp also supplied as an accessory.

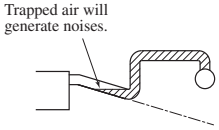


6) Adhesive must not be used.
   a) Glue a VP-25 joint (to be procured locally) to joint it with the drain hose (hard PVC end) and then glue a VP-25 (to be procured locally) to the joint.
   b) Give the drain piping a descending grade (1/50-1/100) and never create a bump to go over or a trap.
   c) In connecting drain pipes, care must be taken so as not to apply force to the unit side piping and fix the pipe at a point as close to the unit as possible.
   d) Do not create an air vent under any circumstances.
   e) When drain piping is implemented for more than one unit, provide a collecting main about 100 mm below the units' drain outlets from which it collects drain. Use a VP-30 or larger pipe for a collecting main.
   f) Do not fail to provide heat insulation at the following two points because they can cause dew condensation and a resultant water leak.

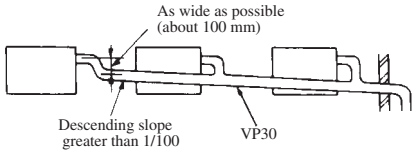


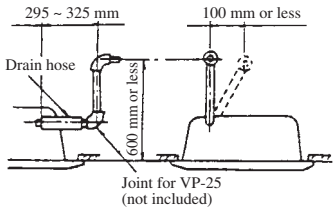


7) Drain socket
   After a drain test is completed, apply a pipe cover (small: accessory) onto the drain socket, cover the pipe cover (small), the clamp and part of the drain hose with a pipe cover (large: accessory) and wrap it with a tape completely without leaving any gaps.
   (Cut pipe covers into appropriate shapes)



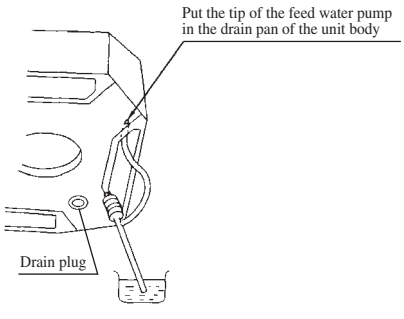
8) Hard PVC pipes laid indoor
   a) Since a drain pipe outlet can be raised up to 600 mm from the ceiling, use elbows, etc. to install drain pipes, it there are obstacles preventing normal drain pipe arrangement. When the drain pipe is raised at a point far from a unit, it can cause an overflow due to a back flow of drain upon stoppage, so arrange piping to keep the dimensions specified in the illustration shown on the left.
   b) Install the drain pipe outlet where no odor is likely to be generated.
   c) Do not lead the drain pipe into a ditch where the generation of harmful gas such as sulfuric gas or flammable gas is expected. A failure to observe this instruction may cause such harmful or flammable gas to flow into the room.





Drainage test

① Check that water is draining thoroughly during test run, and that there are no water leaks from the joints and the drain pan.
② The test has to be performed even if the unit is installed in the season when the unit is used for healting.
③ In a new house, perform the test before the ceiling is fitted.
   • Using a water pump, pour about 1000 cc of water to the drain pan through the blowing outlet.
   • Check the transparent drain-out section of the drain hose for normal flow of drainage.
     * While observing the noise from the drain motor, test drain operation.
   • Take off the drain plug to release the water. After the water is drained, place the drain pulg back where it was..
     * Be careful not to get splashed when pulling the drain plug.



Forced drain pump operation

♦ Set up from a unit side.
① Turn DIP switch SW9-3 on the indoor unit's PCB ON, then after disconnecting the remote control's communications line CnB connector, turn the power ON again.
② After the test, be sure to turn off the DIP switch. Also restore the remote control communications line's CnB connector to its original condition.
   (When electrical work is not completed, connect a convex joint to the drain pipe joint area, arrange an inlet and check leaks and drain connections of the pipe)

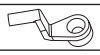
♦ Setup from a remote controller side.

Drain pump operation from a recomte controller unit is possible. Operate a remote controller unit by following the steps described below.

1. To start a forced drain pump operation.
   ① Press the TEST button for three seconds or longer.
   The display will change from "SELECT ITEM" → " SET" → " TEST RUN ▲ "
   ② Press the ▼ button once while " TEST RUN ▼ " is displayed, and cause "DRAIN PUMP ⬍" to be displayed.
   ③ When the SET button is pressed, a drain pump operation will start.
   Display: " DRAIN PUMP RUN"→ " → STOP"
2. To cancel a drain pump operation.
   ① If either SET or ON/OFF button is pressed, a forced drain pump operation will stop.
   The air conditioning system will become OFF.

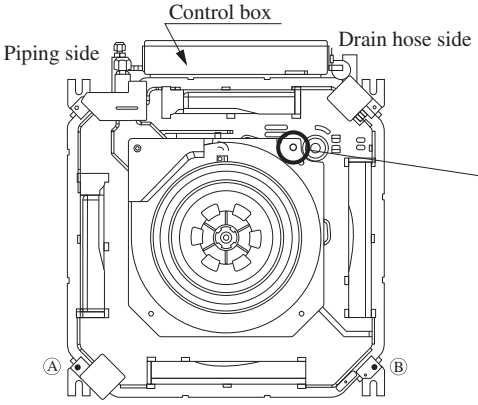
(e) Panel installation

1) Accessories (It is attach to the panel)

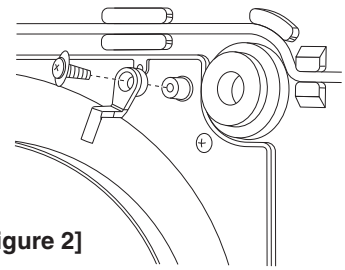
1	Hook		1 piece	For fixing temporarily
2	Chain		2 piece	
3	Screw		4 piece	For hoisting the panel
4	Screw		1 piece	For attaching a hook
5	Screw		2 piece	For attaching a chain

2) Make sure that the unit main body is positioned at the correct height and the opening on the ceiling is made to the correct dimensions with the level gauge supplied with the main body.
Remove the level gauge before you attach the panel.

3) Screw in two bolts out of the four supplied with the panel by about slightly less than 5mm. (● mark ⒶⒷ) [Figure 1]



[Figure 1]

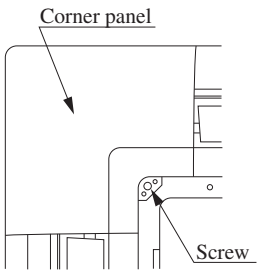


[Figure 2]

4) Attach the hook supplied with the panel to the main body with the hook fixing screw (1 screw). [Figure 2]

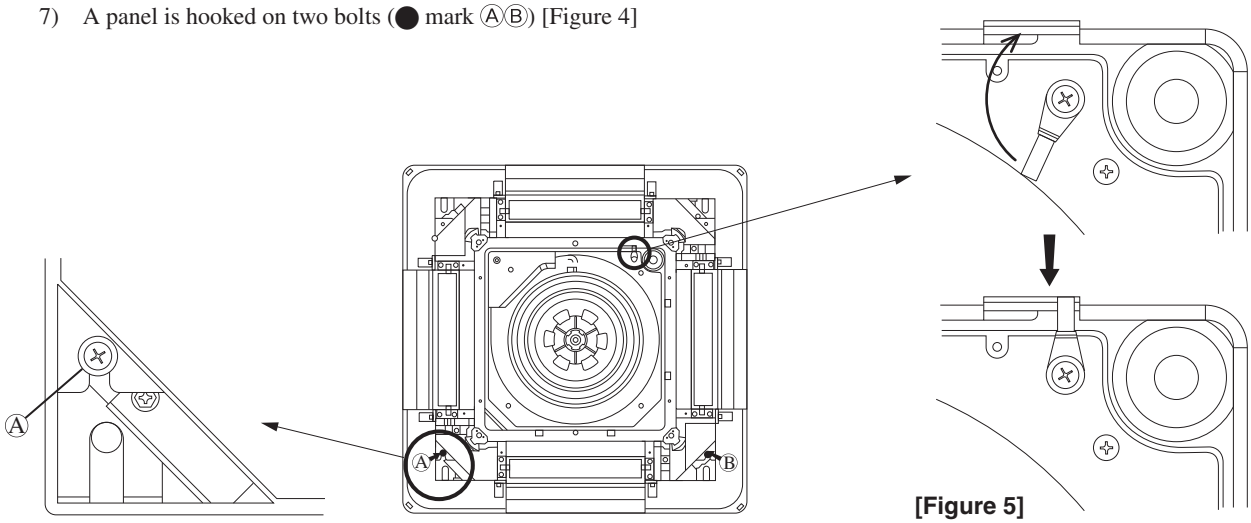
5) Open the air inlet grille.

6) Please remove the screw of a corner panel and remove a corner panel. (four places) [Figure 3]



[Figure 3]

7) A panel is hooked on two bolts (● mark ⒶⒷ) [Figure 4]



[Figure 4]

[Figure 5]

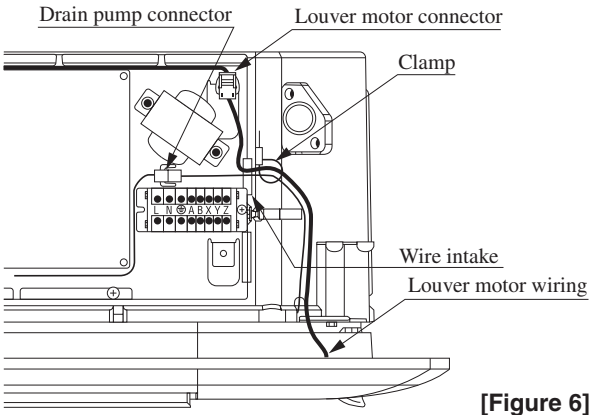
8) Please rotate a hook, put in the slot on the panel, and carry out fixing the panel temporarily. [Figure 5]

9) Tighten the two bolts used for fixing the panel temporarily and the other two.

10) Please open the lid of a control box.

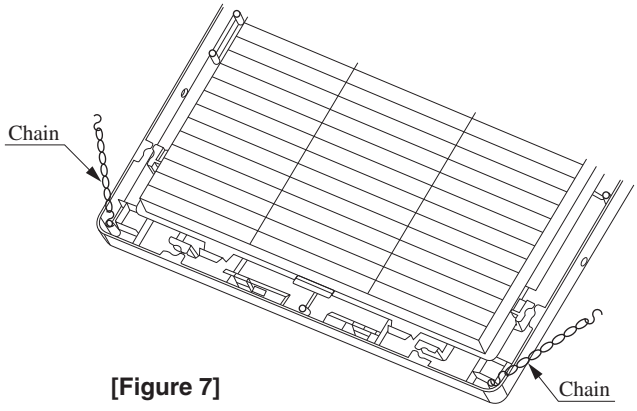
11) Like drain pump wiring, please band together by the clamp and put in louver motor wiring into a control box. [Figure 6]

12) Please connect a louver motor connector. [Figure 6]



[Figure 6]

13) Attach two chains to the air inlet grille with two screws. [Figure 7]



[Figure 7]

14) Replace the corner panels. Please also close a chain with a screw together then.

15) Close the air inlet grille.

(2) Ceiling recessed type (FDT)

(a) Selection of installation location

1) Select location where the space above ceiling is larger than those mentioned right side and perfect draining can be assured.

Model	Space above ceiling (h)
FDT151R, 201R, 251R, 301R	Over 290mm
FDT401R	Over 315mm
FDT501R, 601R	Over 385mm

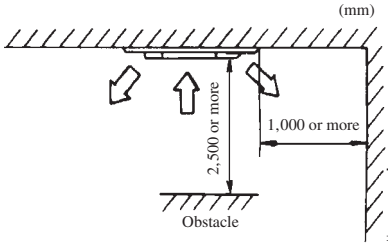
2) With the customer's consent, select a location with following suitable conditions.
   a) Where cool air or hot air can easily pass through.
      If the height of the location exceeds 3 m, hot air will gather in the ceiling. Suggest to the customer to also install a circulator.
   b) Where water can be completely drained. A sloping location for drainage.
   c) Where there are no wind disturbances to the suction inlet and blowing outlet, where the fire alarm will not be set off erroneously, where no short circuits occur.
   d) Where there is no direct sunlight.
   e) Please with the environmental dew-point temperature is lower than 28ºC and the relative humidity is less than 80%.
      (This unit is tested under ISO installation conditions to make sure that there are no defects. However, if it is operated under conditions of high humidity that exceed the conditions above, there is danger of condensate falling from the unit. If there is a possibility that the unit will be used under such conditions, dress 10~20 mm of insulation on the entire unit body, the piping and drain pipe.)
3) Consider the supporting strength of the location. If the strength is not sufficient to sustain the unit weight, use reinforcing materials.

(b) Installation space for unit

a) When a sufficient interval cannot be secured between the unit and a wall or another unit, shut up diffusers on that side to block winds and make sure that no short-circuiting is occurring. (A wind blocking material is available as an optional part)
   • Do not use the unit in the "Lo" wind mode when winds are blown into two or three directions.

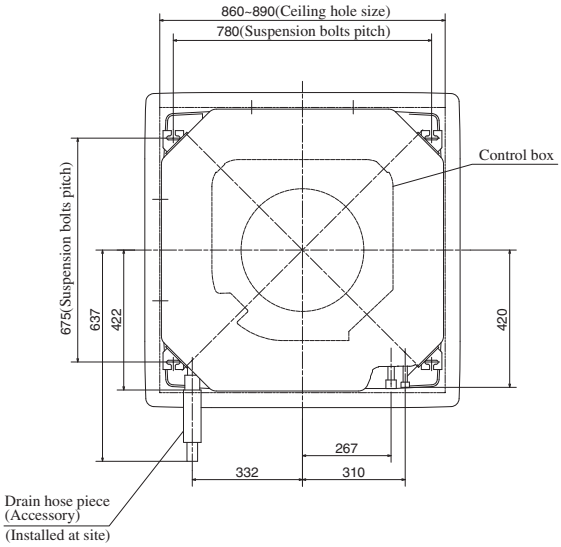
b) When the unit has 2500 mm or less clearance, attach a fan guard (option part) on the intake side of the fan.

• Installation space

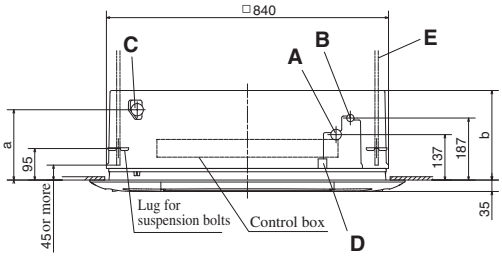


Note (1) In the case of neighboring installations, separate the units by the following dimensions or greater.

Item / Model	Dimensions
FDT151R~301R	4000
FDT401R~601R	5000



A	Gas tube connecting port
B	Liquid tube connecting port
C	Drain line connecting port
D	Power intake
E	Hanging bolt



Model	a	b
FDT151R, 201R, 251R, 301R	212	270
FDT401R	212	295
FDT501R, 601R	269	365

(c) Suspension

- Please arrange four sets of a suspension bolt (M10 or M8), a nut matching the bolt, a flat washers and a spring washer on the installation site.

(i) When suspension from the ceiling

1) In the case of the standard series: Cut and opening of □860 ~ □890.

   In cutting an operating on the ceiling, use the unit's cardboard container for shipment as a reference of the size of opening.

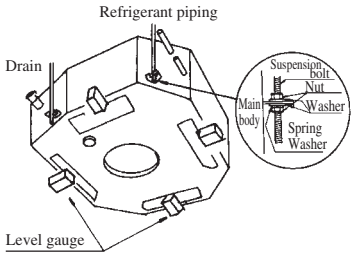
   - The center of the opening on the ceiling must accord with the center of the unit.

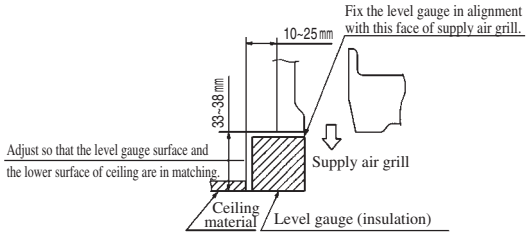
2) Determine the positions of suspension bolts (675×780).

3) Use four suspension bolts, each fastened in such a manner that it can withstand pull force of 50 kgf.

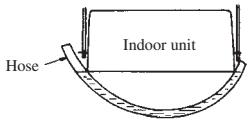
4) Make suspension bolts to the length that leaves approximately 70 mm of them above the ceiling.

5) After hoisting in the unit, attach level gauges supplied as accessories and determine the unit position (height).




Fix the level gauge in alignment with this face of supply air grill.
10~25 mm
33~38 mm
Adjust so that the level gauge surface and the lower surface of ceiling are in matching.
Supply air grill
Ceiling material
Level gauge (insulation)

6) Use a transparent tube with water filled inside to check the level of the unit. (A tolerable height difference at an end of the unit is within 3 mm)



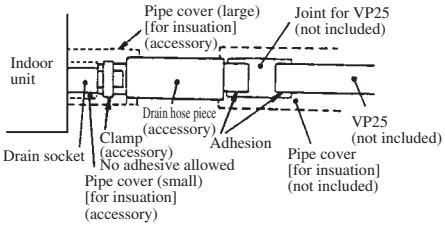
(ii) When embedded into ceiling

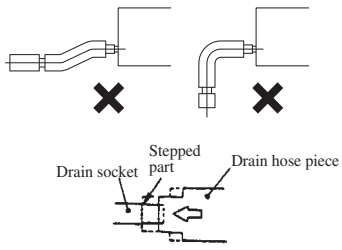
1) Determine the positions of suspension bolts (675×780).
   - The pitch center of a suspension bolt must accord with the center of the unit.
2) Use four suspension bolts, each fastened in such a manner that it can withstand pull force of 50 kgf.
3) In cutting an opening on the ceiling, use the unit's cardboad container for shipment as a reference of the size of opening.
4) Fix the unit as per (i)-5) and 6) above.
   - The unit's cardboard container for shipment can be used to cover the indoor unit.

Note (1) When a hanging bolt exceeds 1.3 m in length, use an M10 bolt and give it reinforcements such as braces.

(d) Drain Piping

1) Glue the drain hose supplied as an accessory and a VP-25 joint before lifting the unit.
2) The drain hose is to provide a buffer to absorb a slight dislocation of the unit or the drain piping during installation work. If it is subject to abuse such as being bent or pulled deliberately, it may break, which will result in a water leak.
3) Care must be taken so as not to allow an adhesive to run into the drain hose. When it is hardened, it can cause a breakage of a flexible part, if the flexible part receives stress.
4) Use VP-25 general-purpose hard PVC pipes for drain piping.
5) Insert the drain hose supplied as an accessory (soft PVC end) to the stepped part of the unit's drain socket and then fasten it with the clamp also supplied as an accessory.
6) Adhesive must not be used.
   a) Glue a VP-25 joint (to be procured locally) to joint it with the drain hose (hard PVC end) and then glue a VP-25 (to be procured locally) to the joint.





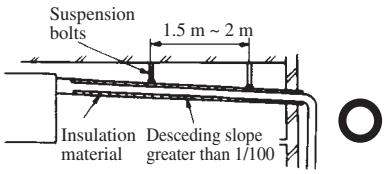
b) Give the drain piping a descending grade (1/50-1/100) and never create a bump to go over or a trap.

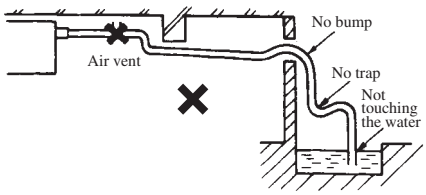
c) In connecting drain pipes, care must be taken so as not to apply force to the unit side piping and fix the pipe at a point as close to the unit as possible.

d) Do not create an air vent under any circumstances.

e) When drain piping is implemented for more than one unit, provide a collecting main about 100 mm below the units' drain outlets from which it collects drain. Use a VP-30 or larger pipe for a collecting main.

f) Do not fail to provide heat insulation at the following two points because they can cause dew condensation and a resultant water leak.

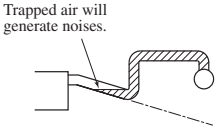




7) Drain socket

After a drain test is completed, apply a pipe cover (small: accessory) onto the drain socket, cover the pipe cover (small), the clamp and part of the drain hose with a pipe cover (large: accessory) and wrap it with a tape completely without leaving any gaps.

(Cut pipe covers into appropriate shapes)

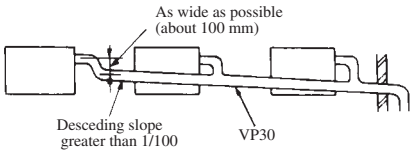


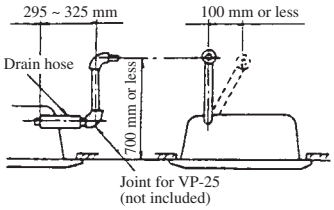
8) Hard PVC pipes laid indoor

a) Since a drain pipe outlet can be raised up to 700 mm from the ceiling, use elbows, etc. to install drain pipes, it there are obstacles preventing normal drain pipe arrangement. When the drain pipe is raised at a point far from a unit, it can cause an overflow due to a back flow of drain upon stoppage, so arrange piping to keep the dimensions specified in the illustration shown on the left.

b) Install the drain pipe outlet where no odor is likely to be generated.

c) Do not lead the drain pipe into a ditch where the generation of harmful gas such as sulfuric gas or flammable gas is expected. A failure to observe this instruction may cause such harmful or flammable gas to flow into the room.





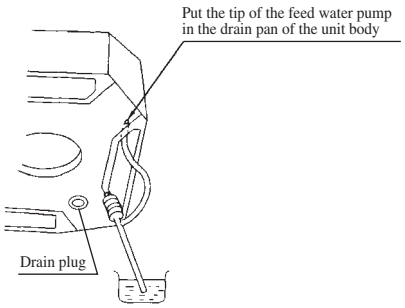
Drainage test

① Check that water is draining thoroughly during test run, and that there are no water leaks from the joints and the drain pan.

② The test has to be performed even if the unit is installed in the season when the unit is used for healting.

③ In a new house, perform the test before the ceiling is fitted.

- Using a water pump, pour about 1000 cc of water to the drain pan through the blowing outlet.
- Check the transparent drain-out section of the drain hose for normal flow of drainage.
  * While observing the noise from the drain motor, test drain operation.
- Take off the drain plug to release the water. After the water is drained, place the drain pulg back where it was.
  * Be careful not to get splashed when pulling the drain plug.



Forced drain pump operation

♦ Set up from a unit side.

① Turn power on after selecting the emergency operation mode with a setting on the indoor unit control PCB (SW9-3 ON) and disconnecting the CnB connector on the board. Then, the drain pump will start a continuous operation 15 seconds later. (Note: The blower will also start operation in tandem)

② When a drain test is completed, reinstate the setting to cancel the emergency operation mode (SW9-3 OFF) and plug in the CnB connector on the board.

(When electrical work is not completed, connect a convex joint to the drain pipe joint area, arrange an inlet and check leaks and drain connections of the pipe)

♦ Setup from a remote controller side.

Drain pump operation from a remote controller unit is possible. Operate a remote controller unit by following the steps described below.

1. To start a forced drain pump operation.
   ① Press the TEST button for three seconds or longer.
   The display will change from " ▲ SELECT ITEM "→ " ○ SET "→ " TEST RUN ▼ "
   ② Press the ▼ button once while " TEST RUN ▼ " is displayed, and cause " DRAIN PUMP ◆ " to be displayed.
   ③ When the SET button is pressed, a drain pump operation will start.
   Display: " DRAIN PUMP RUN "→ " ○ → STOP "
2. To cancel a drain pump operation.
   4 If either SET or ON/OFF button is pressed, a forced drain pump operation will stop.
   The air conditioning system will become OFF.

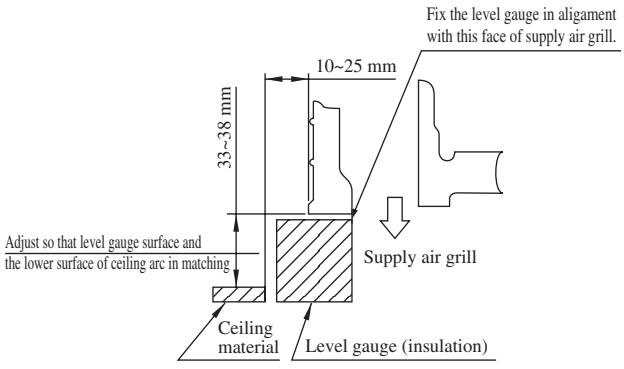
(e) Panel installation

1) Accessories

Name	Quantity
Air inlet grille	1
Air filter	1
Suspension bolts	4

2) Confirm the unit's installation level.

- Make sure from the level gauge (insulation) packed with the air conditioner unit that the installation height of the unit and the dimensions of the opening in the ceiling are correct.
- Confirm the installation level of the air conditioner unit and ceiling material.
- Affix the level gauge included with the air conditioner unit and fix the unit's installation height.
- Remove the level gauge before installing the unit.
- The unit's installation height can be minutely adjusted by means of the corner openings after the panel is installed. (For details, see 6 "Installing the Panel.")


Fix the level gauge in aligament with this face of supply air grill.
10~25 mm
33~38 mm
Adjust so that level gauge surface and the lower surface of ceiling arc in matching
Supply air grill
Ceiling material
Level gauge (insulation)

Note (1) : If the installation level of the air conditioner unit and ceiling material exceed the proper range, it will cause an undue load to be broken during installation of the panel and could cause damage.

3) Unit installation direction and panel and air return grille direction

(a) The unit and panel installation orientation is directional.
- Match up the outlet (small) parts with the refrigerant piping direction.
- Make sure of the motor and switch connector connection directions.

(b) The panel and air return grille installation orientation is not directional.
If you are changing the direction of the air return grille, change the panel's striker installation position to the "Pull" character position direction on the surface of the grille.

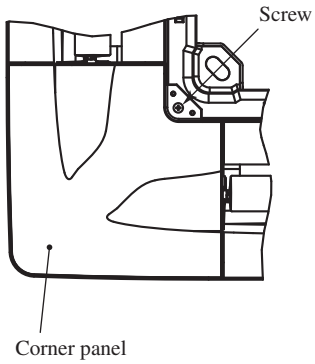
4) Removing the air return grille

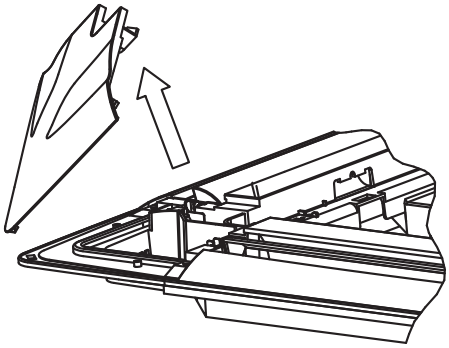
① Raise up the notched portion of the air return grille and open it.

② With the air return grille open, remove the air return grille hinge from the decorator panel.

5) Removing the corner panel

• Take out the screw in the corner, then lift up the corner panel in the arrow direction and remove it.





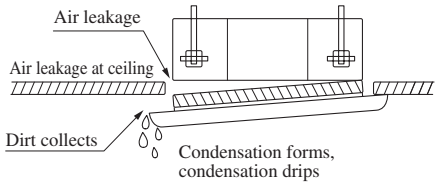
6) Panel installation

① Screw in lightly 2 of the 4 air conditioner unit suspension bolts in opposite corners from each other by about 5 mm. (Fasten the drain piping side and the opposite corner temporarily.)

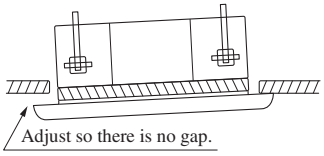
② Hang the panel on the two suspension bolts to install it temporarily.

③ Install the two remaining suspension bolts and tighten all four of the bolts.

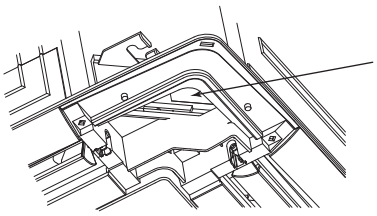
Notes (1) : If the suspension bolts are not tightened sufficiently, it could cause the following trouble, so tighten the bolts securely.



(2) : If there is still a gap between the ceiling and the decorator panel even after the suspension bolts are tightened, readjust the height of the indoor unit.



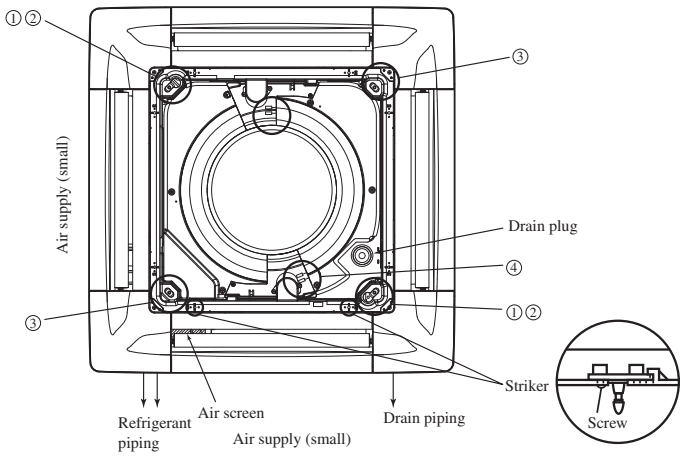
(3) : The unit's installation height can be minutely adjusted with the decorator panel as is as long as the indoor unit is level and drain piping are not affected.



④ Connect the (white, 5p) louver motor connector.

⑤ Place each of the connectors inside the control box.

Note (1) : If the air outlet louver does not operate using the remote controller, check the connector's connection, then turn the main power supply OFF for 10 seconds or longer and turn the power ON again.



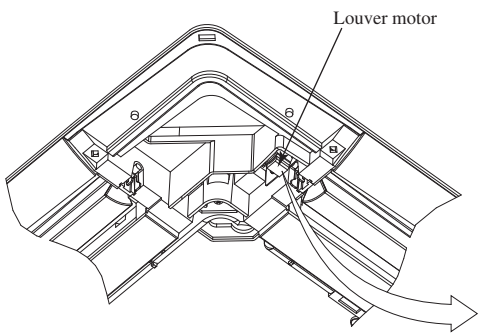
7) If the vertical air-flow direction is fixed

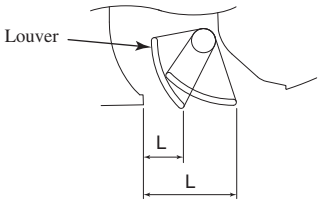
- This decorator panel is designed so that you can fix the vertical air-flow direction at each air supply to match the environment at your installation location. Set it as required by the customer. Furthermore, when the vertical air-flow direction is fixed, remote control operation and all automatic controls are disabled. The actual setting may also differ from the LCD display in the remote controller.

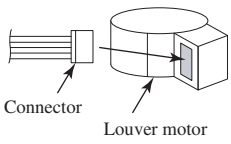
① Turn off the main power supply (turn it off at the ground fault circuit breaker).

② Disconnect the connector to the louver motor at the air supply you want to fix the position of.
Wrap vinyl electrical tape around the disconnected connector to insulate it.

③ Slowly move the vertical air-flow louver you want to fix the position of by hand and set the vertical air-flow direction so that it is within the range shown in the table below.







<Setting Range>

Vertical air-flow direction criterion	Horizontal 30º	Downward 70º
L Dimension (mm)	36.5	22.5

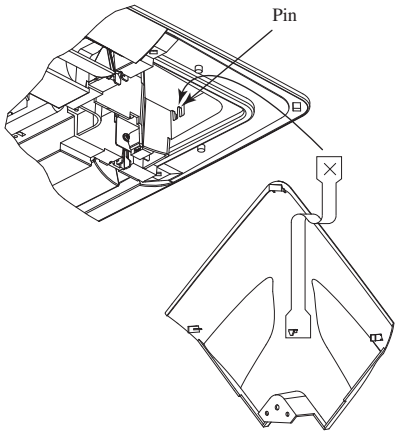
* It can be set anywhere desires as long as it is within a range of 22.5 and 36.5 mm.

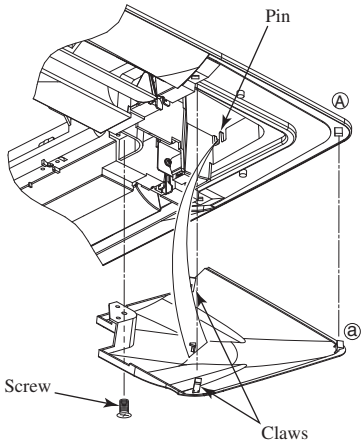
Note (1) : Do not set the position outside this range.
Doing so causes condensate to drip and to form as well as dirtying of the ceiling surface, and could cause abnormal operation.

8) Corner panel installation

① Hook the corner panel strap to the pin on the decorator panel as shown in the figure.

② Insert part ⓐ on the corner panel in part Ⓐ on the decorator panel, then fit the 2 claws and fasten the corner panel screw.





9) Installing the air inlet grille

• Install the air return grille by following the removal procedure (item 4) in reverse order.

Note (1) : Match up the installation position of the panel's striker and the "Pull" character position direction on the surface of the grille. If these do not match, the striker could be damaged.

(3) Ceiling suspended type (FDEN)

(a) Selection of installation location

1) A place where good air circulation and delivery can be obtained.

Cold air throw Unit : m

Model	FDENA151R, 201R	FDENA251R, 301R	FDENA401R, 501R, 601R
Air throw	7.5	8	9

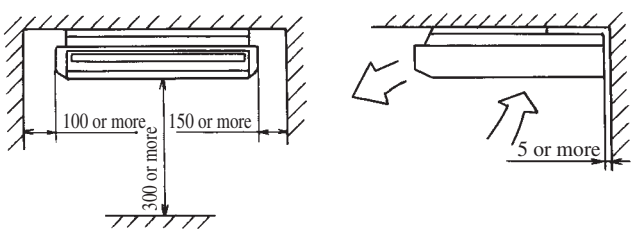
Conditions

(1) Installation height: 2.4 ~ 3.0 m above the floor
(2) Fan speed: Hi
(3) Location: Free space without obstacles
(4) Distance of reach indicates the horizontal distance after the wind touched down the floor.
(5) Air velocity at the throw: 0.5 (m/sec.)

2) A place where ceiling has enough strength to support the unit.
3) A place where there is no obstruction to the return air return and supply air supply ports.
4) Places exposed to oil splashes or steam (e.g. kitchens and machine plants).
Installation and use at such places will incur deteriorations in the performance or corrosion with the heat exchanger or damage in molded synthetic resin parts.
5) A place where the space shown below may be secured.

Ceiling mouting installation

Unit : mm



Note (1) In the case of neighboring installations, separate the units by the following dimensions or greater.

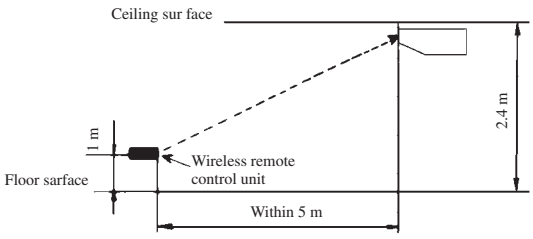
Item / Model	Dimensions
FDENA151R, 201R	4000
FDENA251R, 301R	4500
FDENA401R, 501R, 601R	5000

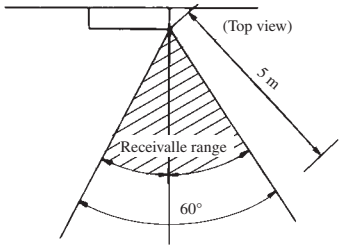
6) This unit uses a microcomputer as a control device. Therefore avoid installing the unit near the equipment that generates strong electromagnetic waves and noise.

(b) Wireless remote control unit operation distance.

1) Standard signal receiving range.

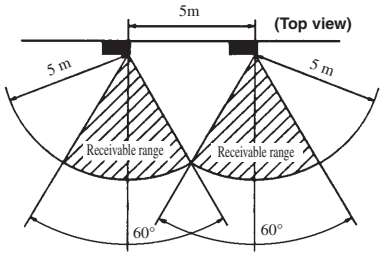
[Condition] Illuminance at the recelver area: 360 lux.
(When no lighting fixture is located with in 1 m of indoor unit in an ordinary office)





2) Points for attention in connecting a plural number of indoor units.

[Condition] Illuminance at the recelver area: 360 lux.
(When no lighting fixture is located within 1 m of indoor unit in an ordinary office)
When the remote control unit is used with the aforementioned interference-prevention setting, a minimum distance guaranteeing the prevention of unintended unit responses is 5 m.

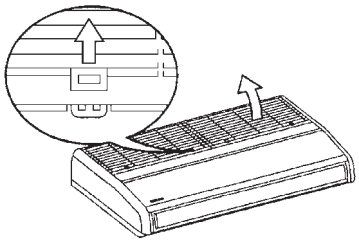


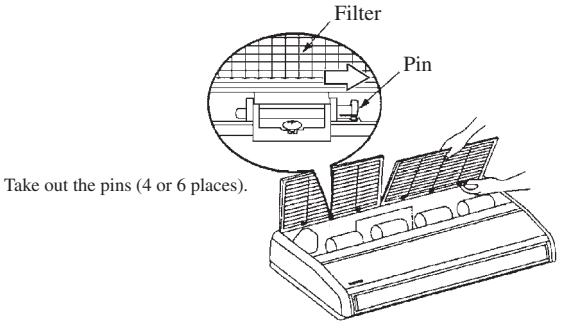
a) Please operate remote control unit switches with the unit faced correctiy toward the indoor unit's receiver section.
b) Effective operation distance can vary with the luminance around the receiver and the reflection from walls of the room.
c) When the receiver is exposed to intensive light such as from the direct sun or a strong light, it may become operable only from a short distance or unable to receive signals at all.

(c) Installation preparation

1) Remove the air return grille.

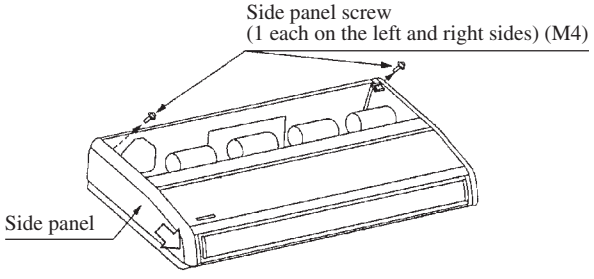
Slide the stoppers (4 places).





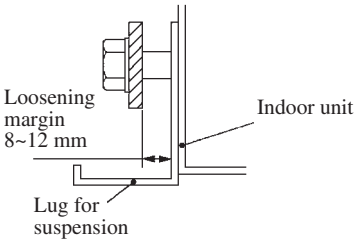
2) Remove the side panels.

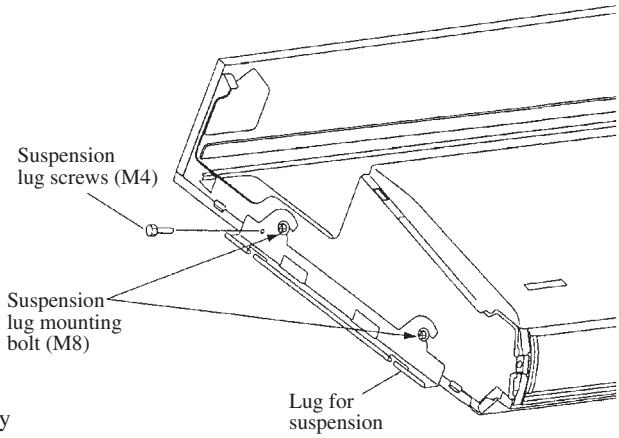
Take out the screws, then slide the side panels in the arrow direction to remove them.



3) Remove the suspension lug.

Take out the screws, then loosen the installation bolt.

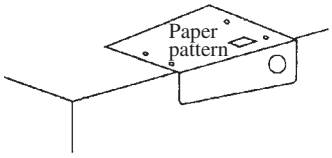


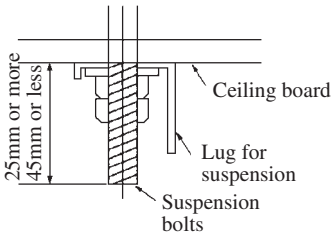


4) Suspension bolt position

a) Using the paper pattern supplied as an accessory as a criterion, select suspension bolt positions and piping hole positions, then install the suspension bolts and make holes for piping. After positioning, remove the paper pattern.

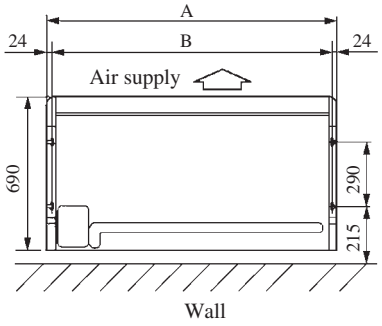
b) Keep strictly to the suspension bolt lengths specified below.





Unit : mm

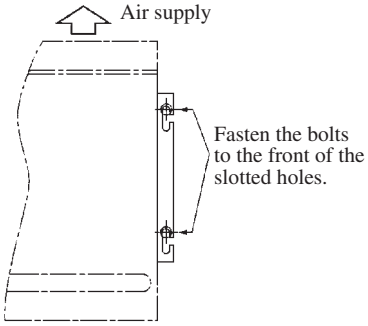
Model	A	B
FDENA151R, 201R	1070	1022
FDENA251R, 301R	1320	1272
FDENA401R, 501R, 601R	1620	1572

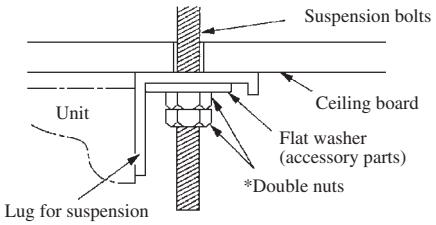


(d) Installation

1) Fasten the suspension lugs to the suspension bolts.

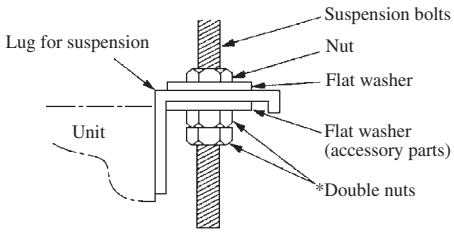
<If there is ceiling material>





*Fasten it securely with double nuts.

<If there is no ceiling material>

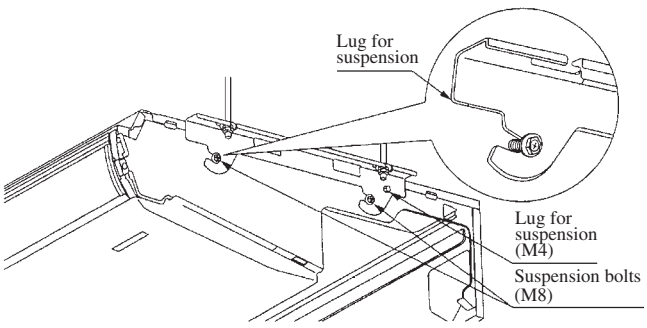


2) Attach the unit to the suspension lugs.

① Slide the unit onto the suspension lugs from the front, hanging it on the bolts.

② Fasten the unit securely on the left and right sides with 4 suspension bolts (M8).

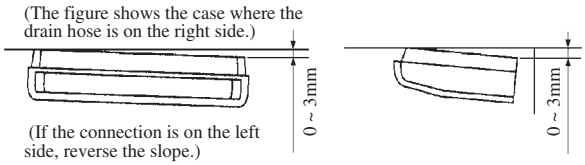
③ Tighten the 2 screws (M4) on the left and right sides.



⚠ After sliding the side panels on from the front to rear, fasten them securely with the screws.

3) In order to make it easier for water to drain out, install the unit so that the water drain side slopes downward.

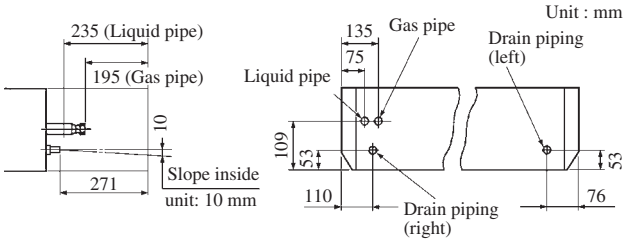
- **Left-right direction**
- **Front-rear direction**


(The figure shows the case where the drain hose is on the right side.)
(If the connection is on the left side, reverse the slope.)
0 ~ 3mm
0 ~ 3mm

⚠ If the slope is reversed, there is danger of water leaking out.

(e) Refrigerant piping

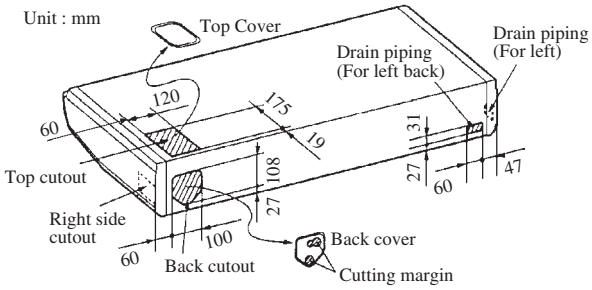
1) Piping position



2) Piping connection position

Piping can be connection from 3 different directions. Remove the cutout from hole where the piping will be connected using side cutters or similar tool. Cut a hole for the piping connection in the back cover according to the cutting margin shown. Cut a hole in the ceiling side in accordance with the position of the piping. Also, after the piping is installed, seal the space around the piping with putty, etc. to keep dust from getting inside the unit.

(In order to prevent damage to wires from the edges, be sure to use the back cover.)



(f) Drain piping

1) Drain piping can be connected from the back, right and left sides.

2) When installing drain piping, be sure to use the insulating material supplied for the drain hose and drain hose clamp.

a) Connect the drain hose fully all the way to the base of the fitting.

b) Fasten the hose securely with the drain hose clamp.

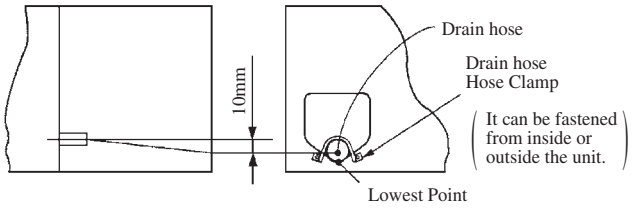
c) Keep strictly within the lengths specified below for the suspension bolts.

3) If drain piping is installed on the left side, change the rubber plug and insulating material (tubular) from the left side piping connection port to the right side.

⚠ Be careful that water doesn't pour out when the drain plug is removed.

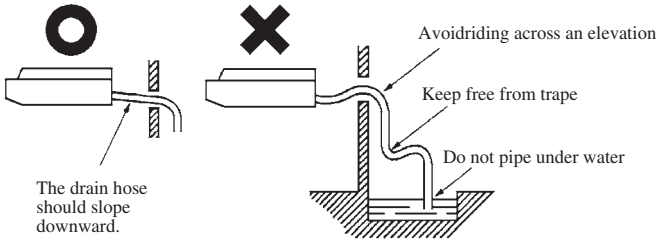
⚠WARNING

Use the fitting supplied with the unit to connect the drain hose, fastening it at the lowest point so that there is no slack, and establishing a 10 mm drain slope. * Keep electrical wiring from running beneath the drain hose.



⚠ Be sure to fasten the drain hose down with a clamp.

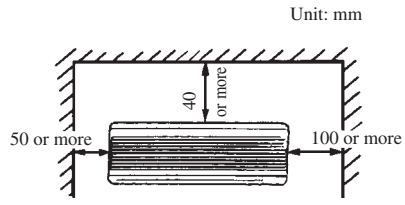
There is danger of water overflowing the drain hose.



After piping has been installed, check to make sure water drains well and that there is no overflow.

(4) Wall mounted type (FDKN)

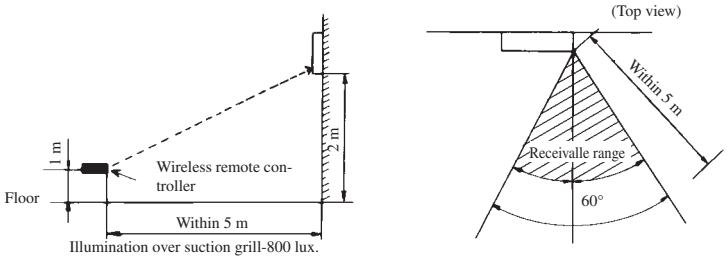
(a) Selection of installation location



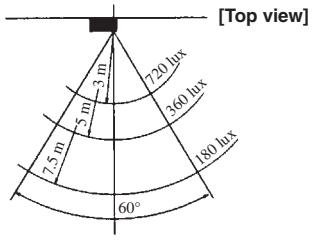
1) Select the installation location that meets the following conditions and obtain the customer's consent.
   a) Location where cold and warm air spread all over the room
   b) Location where piping and wiring to the outdoors can easily be laid down.
   c) Location where the drain can be discharged completely.
   d) Location where the wall to mount the unit is rigid.
   e) Location where there is no wind obstruction to the air return and air supply grills.
   f) Location not exposed to direct sunshine.
   g) Avoid the location exposed to oil splash or vapor.
   h) Avoid the location near to the machine emitting high-frequency radio wave.
   i) Avoid the location where the receiver of remote control is subject to strong illumination.
   j) Select the location where the unit can securely be operated by the wireless remote controller referring to the Article "Effective distance of wireless remote controller" indicated at the backside.
   k) Secure the space for inspection and maintenance work.

(b) Cautions for use of wireless remote controller

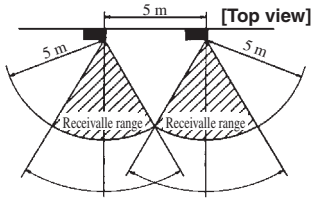
1) Opareting distance of wireless remote controller



Relation between illumination at receiver unit and operating distance



Caution item for close installation of multiple units



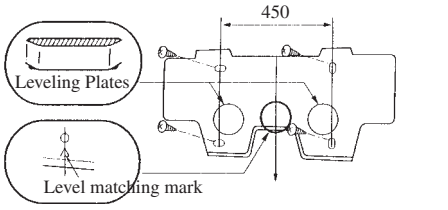
[Condition] Illumination at suction grill face 800 lux

2) Cautions for operation
   a) Orient the remote control switch properly toward the receiver of the unit.
   b) Operating distance is as shown above but it may vary largely depending on the conditions.
   c) Effective distance may be shortened and the receiving may be disturbed when the receiver is under the condition of direct exposure to sunlight or other strong light like electric bulb, dust is accumulated on it and it is shielded with a curtain, etc.

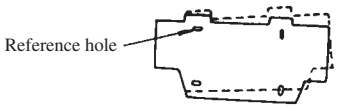
(c) Attaching of mounting plate

1) The indoor unit weighs approx, 12kg. Therefore, check whether the portion to install the unit can bear the weight of unit. If it seems to be danger, reinforce the portion by a plate or a beam before installing the unit. It is not allowed to install the unit directly on the wall. Whenever you install the unit, use the attached mounting plate.
2) Find structural members (Intermediate pillar, etc.) suitable for mounting the unit, then install the unit firmly while checking levelness.

Unit: mm



3) Adjust the level of mounting plate under the condition that four screws are tightened temporarily.



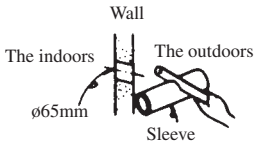
4) Turn the mounting plate around the reference hole to adjust the levelness.

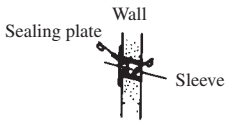
⚠WARNING

Install the unit where it can bear the weight with sufficient strength margin. In the case of insufficient strength or insufficient installation work, the unit may fall and cause injury.

(d) Procedure for making hole on the wall

- Make a downgrade (5°) from the indoors toward the outdoors.

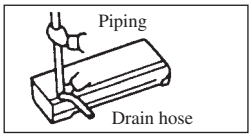




(e) Forming of piping and drain hose

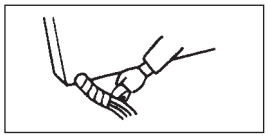
1) Rear take out case

a) Forming of piping



- Hold the root portion of piping, change the direction then expand and make forming.

b) Tape winding

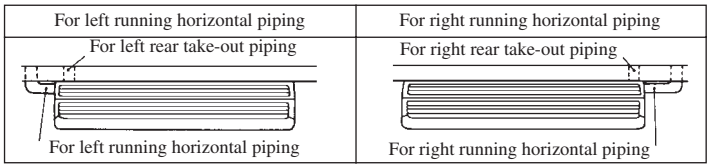


- Wind the tape on the portion which passes through the hole on the wall.
- Always make taping on the wiring which crosses with the piping, if any.

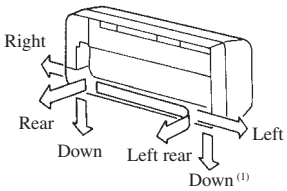
Note (1) After forming of piping and before tape winding, confirm that the connecting wire is securely fixed to the terminal block.

2) Cautions for left take-out and rear take-out case

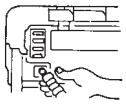
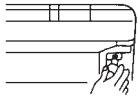
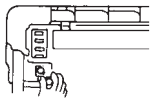
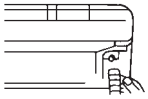
a) Looking down


For left running horizontal piping
For left rear take-out piping
For left running horizontal piping
For right running horizontal piping
For right rear take-out piping
For right running horizontal piping

b) The piping can be taken out from the rear, left, left rear, right and down.

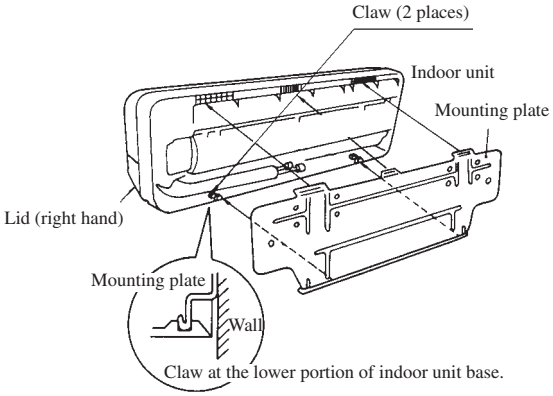


b) Procedure for changing drain hose

1. Remove the drain hose.	2. Remove the drain cap.	3. Insert the drain cap.	4. Connect the drain hose.
			
• Pull the drain hose off while turning the end around.	• Remove by hand or pliers.	• Insert the drain cap which was removed in procedure 2 securely using a hexagonal wrench, etc. Note(1) When it is not inserted securely, water leakage may occur.	• Push the end of the drain hose onto the fitting while turning it around. Note(1) When it is not inserted securely, water leakage may occur.

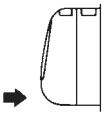
(f) Installation of unit

- To remove the unit from the mounting plate, remove the right and left lids then remove the claw at the lower portion of base.



Installation work procedure

(1) Hang the upper portion of in-door unit on the mounting plate.



(2) The indoor unit can be fixed with one action by pushing its lower portion slightly.

(g) Drain piping

1) Lay the drain piping with downgrade to facilitate flow of drain,and do not make a trap or chevron-shaped bend. (The drain piping can be taken out from the unit to the left, right, rear and down direction.)
2) Wrap the thermal insulator on the hard vinyl chloride pipe (VP-16) laid in the room.
3) Run the drain piping in a place where there is no fear of abnormal odors being generated at the end of the drain hose.
4) Do not run the drain piping directly into a sewer where sulfur-based poisonous or flammable gases are generated. There is danger of poisonous or flammable gases penetrating into the building through the drain piping.
5) Pour water into the drain pan below the heat exchanger to chech that water is drained outdoors.

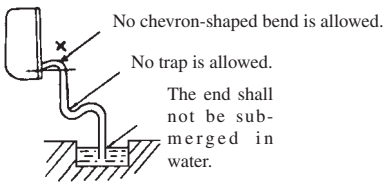
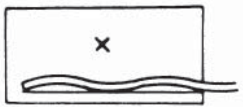


Illustration showing the end of drain hose



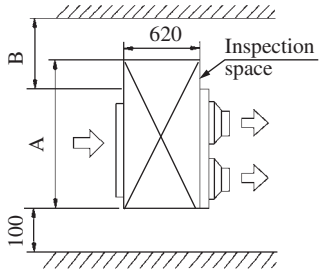
(5) Satellite ducted type (FDUM)

(i) Selection of installation location

1) Avoid installation and use at those places listed below.
   a) Places exposed to oil splashes or steam (e.g. kitchens and machine plants).
   Installation and use at such places will incur deteriorations in the performance or corrosion with the heat exchanger or damage in molded synthetic resin parts.
   b) Places where corrosive gas (such as sulfurous acid gas) or inflammable gas (thinner, gasoline, etc.) is gnerated or remains.
   Installation and use at such places will cause corrosion in the heat exchanger and damage in molded synthetic resin parts.
   c) Places adjacent to equipment generating electromagnetic waves or high-frequency waves such as in hospitals. Generated noise may cause malfunctioning of the controller.

2) Select places for installation satisfying the following conditions and, at the same time, obtain the consent on the part of your client user,
   a) Places where chilled or heated air circulates freely. When the installation height exceeds 3m, warmed air stays close to the ceiling. In such cases, suggest your client users to install air circulators.
   b) Places where perfect drainage can be prepared and sufficient drainage gradient is available.
   c) Places free from air disturbances to the return air port and supply hole of the indoor unit, places where the fire alarm may not malfunction to short circuit.
   d) Places with the environmental dew-point temperature is lower than 28˚C and the relative humidity is less than 80%.
   This unit is tested under ISO installation conditions to make sure that there are no defects. However, if it is operated under conditions of high humidity that exceed the conditions above, there is danger of condensate falling from the unit. If there is a possibility that the unit will be used under such conditions, dress 10~20 mm of insulation on the entire unit body, the piping and drain pipe.

3) Check if the selected place for installation is rigid enough to stand the weight of thew unit.
   Otherwise, apply reinforcement using boards and beams before starting the installation work.

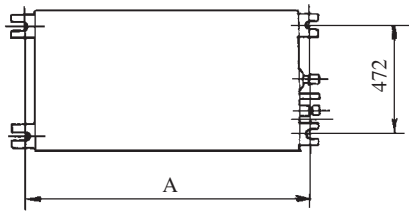


Unit : mm

Models \ Mark	A	B
FDUMA202R	1100	600
FDUMA252, 302R	1300	600
FDUMA402 ~ 602R	1720	600

(ii) Suspension

Be sure to observe the finished length of the suspension bolts given below.

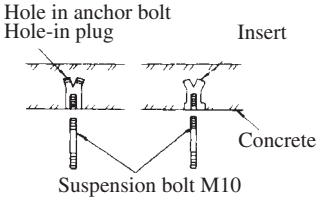


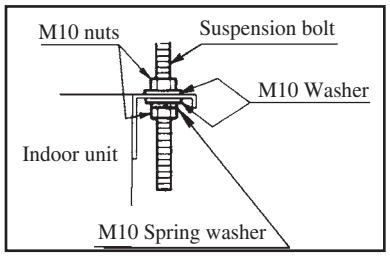
Unit : mm

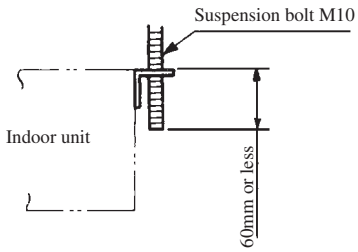
Models \ Mark	A
FDUMA202R	786
FDUMA252, 302R	986
FDUMA402 ~ 602R	1406

1) Fixing the suspension bolt (customer ordered parts M10)

Securely fix the suspension bolt as illustrated below or in another way.



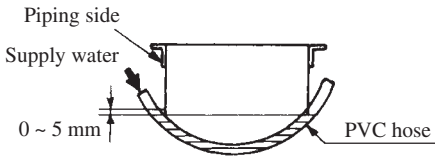




2) Adjusting the unit's levelness

a) Adjust the out-levelness using a level vial or by the following method.

- Make adjustment so that the relation between the lower surface of the indoor unit proper and water level in the hose becomes given below.



Bring the piping side slightly lower

b) Unless the levelness is adjusted properly, the malfunction of the float switch will occur.

3) Blower fan tap switch

The following two methods are available in switching the blower fan tap. Switch to the high-speed tap with one of these methods.

SW9-4	ON	Fan control,high speed (High ceiling)
	OFF	Fan control,standard

① Set SW9-4 provided on the indoor unit PCB to ON.

② By means of function setting from the remote control unit, set the setting Ⓒ of "I/U FUNCTION ▲" (indoor unit function) to "Hi CEILING 1 " (high-speed tap) as shown right.

Function numberⒶ	Function descriptionⒷ	SettingⒸ
01	Hi CEILING SET	Hi CEILING 1

For the details of operating procedures, please refer to the installation manual of your remote control unit.

(iii) Duct work

① Supply air duct

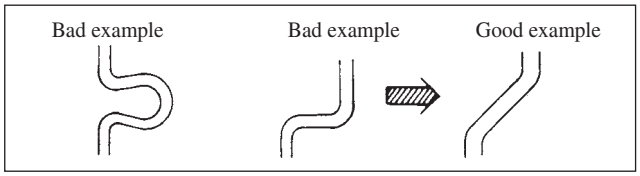
- 2-spot, 3-spot and 4-spot with ø200 type duct are the standard specifications. Determine the number of spots based on following table.

FDUMA202R	FDUMA252, 302R	FDUMA402 ~ 602R
2-spot	2 ~ 3-spot (1)	3 ~ 4-spot (2)

Notes (1) Shield the central supply air port for 2-spot.

(2) Shield the supply air port around the center for 3-spot.

- Limit the difference in length between spots at less than 2:1.
- Reduce the length of duct as much as possible.
- Reduce the number of bends as much as possible. (Corner R should be as larger as possible.)



② Access door

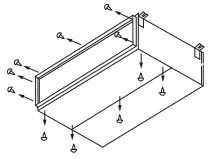
Access door must be provided without fail.

- **Dimensions of access door and service space**

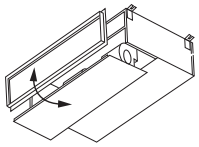
(See exterior dimensions in page 98 to 100.)

③ **Return air port**

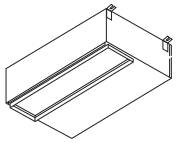
- When shipped, the return air port lies on the back.
- When connecting the duct to the return air port, remove the air filte if it is fitted to return air port.
- When placing the return air port to carry out suction from the bottom side, use the following procedure to replace the return air duct joint and the bottom plate.



• Remove the screws which fasten the bottom plate and the duct joint on the return air port of the unit.



• Replace the removed bottom plate and duct joint.

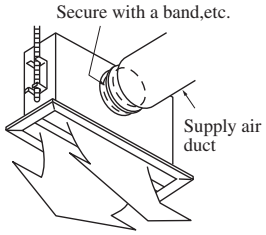


• Fit the duct joint with a screw, fit the bottom plate.

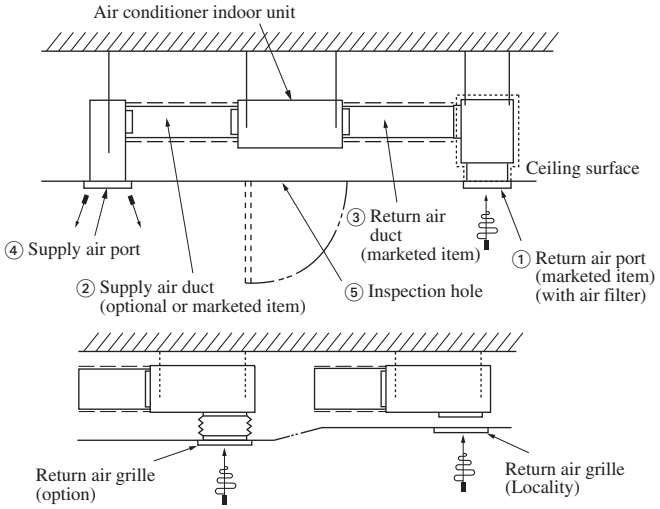
- Make sure to insulate the duct to prevent dewing on it.

④ Install the specitic supply air duct in a location where the air will circulate to the entire room.

- The duct connection is specific to the 200 circular duct.
- Conduct the installation of the specific supply air hole and the connection of the duct before attaching them to the ceiling.
- Insulate the area where the duct is secured by a band for dew condensation prevention.



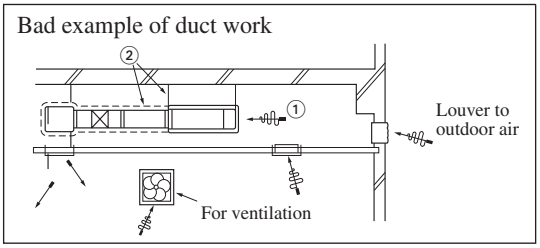
⑤ Make sure provide an inspection hole on the ceiling. It is indispensable to service electric equipment, motor, functional components and cleaning of heat exchanger.


Air conditioner indoor unit
Ceiling surface
③ Return air duct (marketed item)
④ Supply air port
① Return air port (marketed item) (with air filter)
② Supply air duct (optional or marketed item)
⑤ Inspection hole
Return air grille (option)
Return air grille (Locality)

⑥ If a duct is not provided at the return air side but it is substituted with the space over the ceiling, humidity in the space will increase by the influence of capacity of ventilation fan, strength of wind blowing againat the outdoor air louver, weather (rainy day) and others.

- Moisture in air is likely to condense over the external plates of the unit and to drip on the ceiling. Unit should be operated under the conditions as listed in the above table and within the limitation of wind volume. When the building is a concrete strucially immediately after the construction, humidity tends to rise if the space over the ceiling is not substitued in place of a duct. In such occasion, it is necessary to insulate the entire unit with glass wool (25mm). (Use a wire net or equivalent to hold glass wool in place.)
- It may run out the allowable limit of unit operation (Example: When outdoor air temperature is 35ºCD.B, return air temperature is 27ºCW.B) and it could result in such troubles as compressor overload, etc..

• There is a possibility that the supply air volume may exceed the allowable range of operation due to the capacity of ventilation fan or strength of wind blowing against external air louver so that drainage from be heat exchanger may fail to reach the drain pan leak outside (e.g. drip on to the with consequential water leakage in the room.)



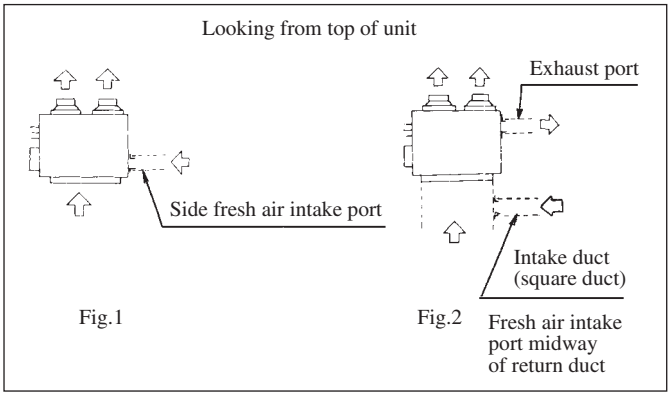
Notice: Aspecific cover plate is available when changing the 4 spot to the 3 spot, or when changing the 3 spot to the 2 spot.

Note (1) Do not change from 2 spot to 1 spot.

⑦ Return air duct: Use square duct.

⑧ Return air port with canvas duct

1) Connection of intake and exhaust ducts.



2) Duct connecting position.

< Fresh air intake >

a) Use side air intake port.

b) In case of simultaneous intake and exhaust, the side air intake port cannot be used, therefore, take air from the midway air intake port along the intake duct.

< Exhaust > Make sure to use suction as well.

c) Use a side exhaust port.

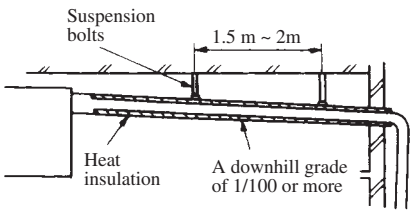
3) Duct connection

Use intake and exhaust duct flange of separately sold (for connection of ø125mm round duct) to connect ø125mm round duct. The duct clamped by bands must be thermally insulated to prevent dew condensation.

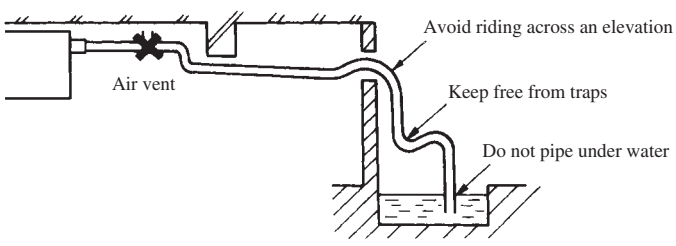
(iv) Drain piping

1) Drain piping should always be in a downhill grade (1/50-1/100) and avoid riding across an elevation or making traps.

• Good piping

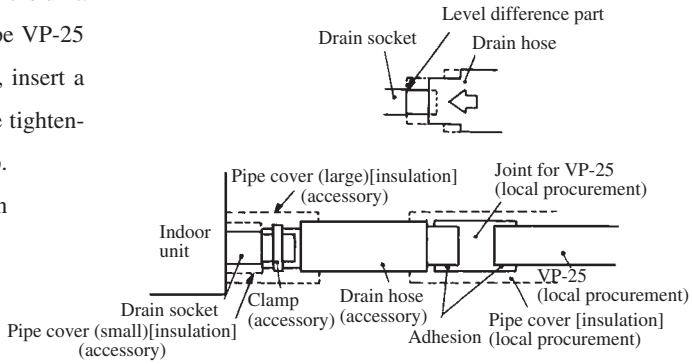


• Improper piping

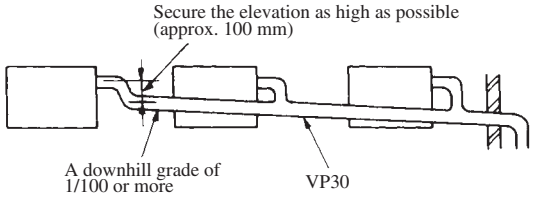


2) When connecting the drain pipe to the unit, pay sufficient attention not to apply excess force to the piping on the unit side. Also, fix the piping at a point as close as possible to the unit.

3) For drain pipe, use hard PVC general purpose pipe VP-25 which can be purchased locally. When connecting, insert a PVC pipe end securely into the drain socket before tightening securely using the attached drain hose and clamp. Adhesive must not be used connection of the drain socket and drain hose (accessory).



4) When constructing drain piping for several units, position the common pipe about 100 mm below the drain outlet of each unit as shown in the sketch below. Use VP-30 or thicher pipe for this purpose.

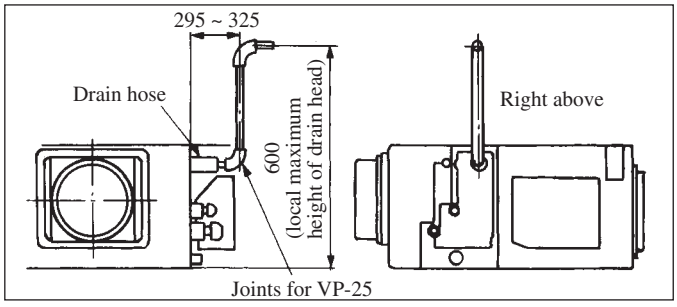


5) Be sure to provide heat insulation to hard PVC pipes of indoor placement.

6) Do not ever provide an air vent.

7) The height of the drain head may be elevated up to a point 600 mm from the bottom of unit and, when an obstacle exists in the ceiling space, elevate the piping to avoid the obstacle using an elbow or corresponding gadget. When doing this, if the stretch for the needed height is too high, the back-flow quantity of drain at the time of interruption of the operation gets too much and it may cause overflow at the drain pan. Therefore, make the height of the drain pipe within the distance given in the drawing below.

Unit : mm



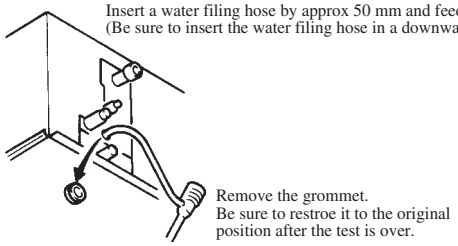
8) Avoid positioning the drain piping outlet at a place where generation of odor may stimulated. Do not lead the drain piping direct into a sewer from where sulfur gas may generate.

9) Drainage test

a) During trial operation, make sure that drainage is properly execued and check that leakage is not found at connections.

b) Be sure to carry out a drainage test when installing the system during a heating season.

c) When installing the system in a building under construction, carry out the drainage test before ceiling tiles are installed.


Insert a water filing hose by approx 50 mm and feed water.
(Be sure to insert the water filing hose in a downward direction.)
Remove the grommet.
Be sure to restroe it to the original
position after the test is over.

① Supply approx 1000cc of water through the outlet of the unit using a feed water pump.

② Make sure that drainage is proceeding properly at the see-through outlet of the unit.

* Also confirm the revolving sound of the condensate motor when checking the drainage.

③ Then remove the drain plug at lower section of the unit to drain water off. After making sure water is not left, restore the drain plug to the original position.

Forced drain pump operation

♦ Setup from a unit side.

① Turn power on after selecting the emergency operation mode with a setting on the indoor unit control PCB (SW9-3 ON) and disconnecting the CnB connector on the board. Then, the drain pump will start a continuous operation 15 seconds later.
(Note: The blower will also start operation in tandem)

② When a drain test is completed, reinstate the setting to cancel the emergency operation mode (SW9-3 OFF) and plug in the CnB connector on the board.

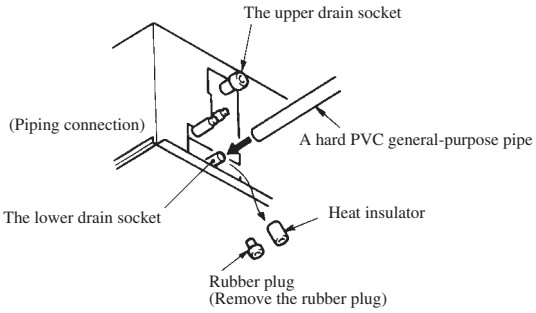
(When electrical work is not completed, connect a convex joint to the drain pipe joint area, arrange an inlet and check leaks and drain conditions of the pipe.)

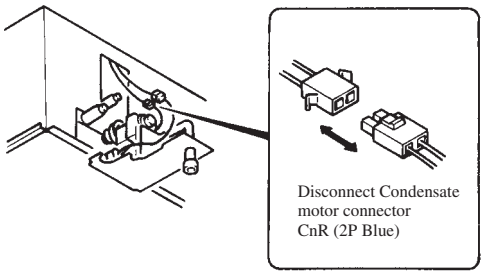
♦ Setup from a remote controller side.
Drain pump operation from a remote controller unit is possible. Operate a remote controller unit by following the steps described below.

1. To start a forced drain pump operation
   ① Press the TEST button for three seconds or longer.
   The display will change from "AIR CON No SELECT ITEM"→ " SET"→ " TEST RUN ▼"
   ② Press the ▼ button once while " TEST RUN ▼" is displayed, and cause "DRAIN PUMP ▲▼" to be displayed.
   ③ When the SET button is pressed, a drain pump operation will start.
   Display: "DRAIN PUMP RUN"→ " → STOP"
2. To cancel a drain pump operation.
   ① If either SET or ON/OFF button is pressed, a forced drain pump operation will stop.
   The air conditioning system will become OFF.

10) Drainage from the lower drain socket

Only if the drain pipe can be installed in a downhill grade (1/50-1/100), the lower drain socket can be used for connecting to the drain pipe as illustrated.
(Disconnect the connector for the drain motor)
As shown in the sketch to the right, disconnect the drain motor connector CnR (blue color coding).
If the system is started with this connector connected as is, drain water is discharged out of the upper drain socket causing a heavy water lekage.

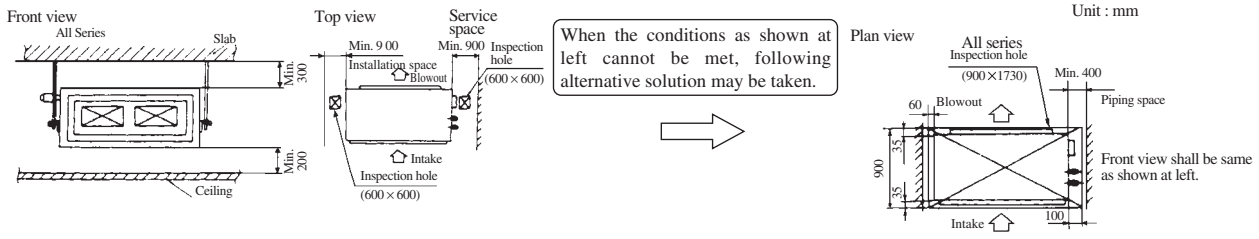




(6) High static pressure duct type (FDU)

(a) Selection of installation location

1) Install the unit at a place as shown below and which meets the conditions as shown by the following table.



Air conditions, limitation of air volume

	Air volume (m^3/min)			Indoor unit suction air temperature		Ambient temperature around indoor unit
	Rating	Lower limit	Upper limit	Cooling	Heating	
801 model	51	38	65	Upper limit 26˚CWB When outdoor temperature is 35˚C	Upper limit 27˚CDB Outdoor temperature is below 20˚CWB	Dew point temperature below 23˚C
1001 model	68	51	87	Lower limit 16˚CWB When outdoor temperature is 15˚C	Lower limit 10˚CDB Outdoor temperature is above 10˚CWB	
				For further details refer to the engineering data which		

2) Places where perfect drainage can be prepared and sufficient drainage gradient is available.

3) Places free from air disturbances to the air inlet and outlet of the indoor unit.

4) Places with the environmental dew-point temperature is lower than 28°C and the relative humidity is less than 80%.

(This unit is tested under ISO installation conditions to make sure that there are no defects. However, if it is operated under conditions of high humidity that exceed the conditions above, there is danger of condensate falling from the unit. If there is a possibility that the unit will be used under such conditions, dress 10~20 mm of insulation on the entire unit body, the piping and drain pipe.)

5) Do not place where the unit is exposed to oil splashes or steam (e.g. kitchens and machine plants).
(Installation and use at such places will cause the performance drop, corrosion in the heat exchanger and damage in molded synthetic resin parts.)

6) Do not place where corrosive gas (such as sulfurous acid gas) or inflammable gas (thinner, gasoline, etc.) is generated or remains.
Installation and use at such places will cause corrosion in the heat exchanger and damage in molded synthetic resin parts.

7) Do not place adjacent to equipment generating electromagnetic waves or high-frequency waves such as in hospitals, Generated noise may cause malfunctioning of the controller.

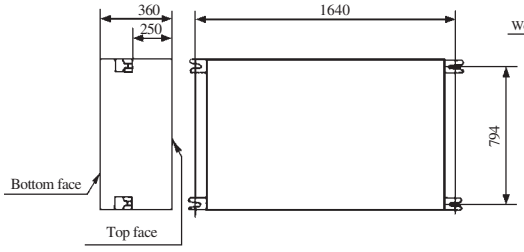
(b) Installation

<Delivery>

○ When delivering the package, move the package to the installation as close as possible.

○ When it is unpacked and then moved to the installation place, sufficient care must be taken not to damage the unit during transfer.

<Hanging bolt location>



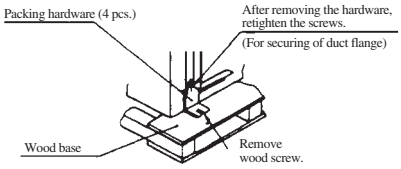
○ To adjust the level, use a level gauge or adjust as shown by the left figure.

Note: Unless the level is adjusted properly, the float switch may malfunction or operate improperly.

<Packing hardware>

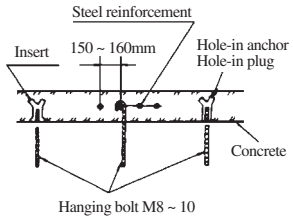
Four pieces of packing hardware are used.

Discard them after unpacking.

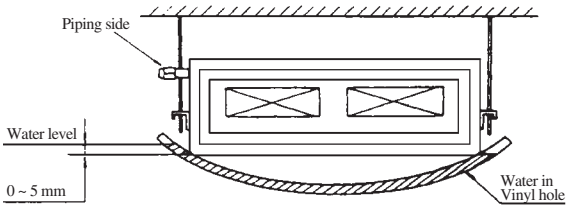

Packing hardware (4 pcs.)
After removing the hardware, retighten the screws.
(For securing of duct flange)
Wood base
Remove wood screw.

<Securing of Hanging Bolt>

Secure the hanging bolts by either one of following methods.

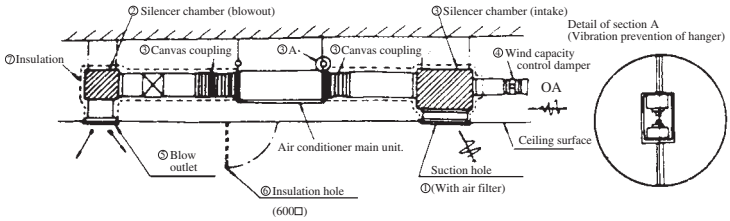


<Adjustment level>



Adjust the piping side a little lower than the opposite side.

(c) Duct work



① Air filter is not installed in the main unit of air conditioner. Air filter should be installed in the suction grill which allows an ample access for cleaning.

② Silencer chamber(s) may be necessary depending on the noise level allowed in the room where the air conditioner is installed.
Additional silencer may be necessary where a particularly low noise is required.
(Provision of silencer is a must at offices and a meeting room.)

③ In order not to transmit vibration from the main unit of air conditioner to the ceiling or slab, it is necessary to provide means to prevent vibration, for example, a canvas coupling on the duct or rubber cushion on the main unit of air conditioner.

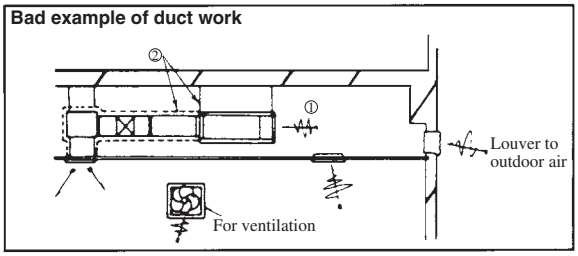
④ A damper to control air volume should be installed on the joint of OA duct to facilitate control of air capacity after the installation.

⑤ Location and from of blow outlet should be selected so that air from the outlet will be distributed all over the room, and equipped with a device to control air volume.

⑥ Make sure to provide an inspection hole on the ceiling. It is indispensable to service electric equipment, motor, functional components and cleaning of heat exchanger.

⑦ Make sure to insulate the duct to prevent dewing on it.
Thickness of insulating material is 65 mm minimum.

Bad example of duct work



① If a duct is not provided at the suction side but it is substituted with the space over the ceiling, humidity in the space will increase by the influence of capacity of ventilation fan, strength of wind blowing against the outdoor air louver, weather (rainy day) and others.

a) Moisture in air is likely to condense over the external plates of the unit and to drip on the ceiling.
Unit should be operated under the conditions as listed in the above table and within the limitation of wind volume.
When the building is a concrete structure, especially immediately after the construction, humidity tends to rise even if the space over the ceiling is not substituted in place of a duct.
In such occasion, it is necessary to insulate the entire unit with glass wool (25 mm).
(Use a wire net or equivalent to hold the glass wool in place.)

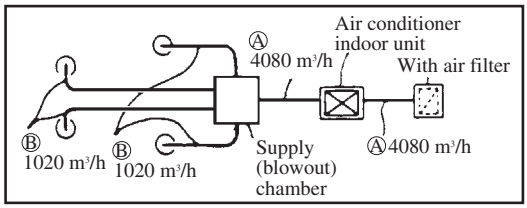
b) It may run out the allowable limit of unit operation (Example: When outdoor air temperature is 35°CDB, suction air temperature is 27°CWB) and it could result in such troubles as compressor overload, etc.

c) There is a possibility that the blow air volume may exceed the allowable range of operation due to the capacity of ventilation fan or strength of wind blowing against external air louver so that drainage from the heat exchanger may fail to reach the drain pan but leak outside (e.g. drip onto the ceiling) with consequential water leakage in the room.

② Unless vibration isolation is provided between the unit and duct and between the unit and the slab, vibration will be transmitted to the duct so that vibration noise may generate from between the ceiling and blow outlet or vibration may be transmitted to the slab. Make sure to provide an effective vibration prevention means.

<Simplified method for determination of duct dimensions>

In the following method, it is assumed that the friction resistance per unit length of duct is 1 Pa/m (0.1 mm Aq/m) and a side of duct is 250 mm.
Air volume rating is assumed to be FDUA1001R.



○ Calculation of duct resistance
(Use following simplified calculations.)

	Air volume	Duct (mm × mm)
Section Ⓐ	4080m³/h (68m³min)	250 × 830
Section Ⓑ	1020m³/h (17m³min)	250 × 270

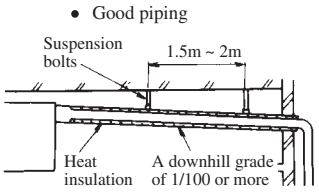
Linear pipe section	Calculate based on 1 Pa per 1 m in length 1 Pa/m.
Curved pipe section	Take a curved section as equivalent to 3 ~4 m in straight line.
Blowout section	Calculate based on 25 Pa.
Chamber	Calculate by taking 1 pc. as 50Pa.
Suction grill (with filter)	Calculate by taking 1 pc. as 40Pa.

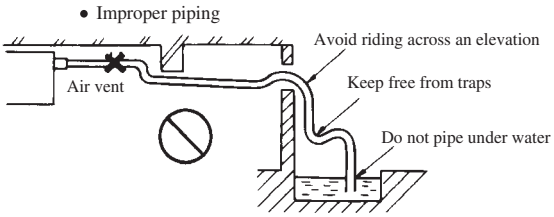
<Table of simplified selection of duct dimensions>

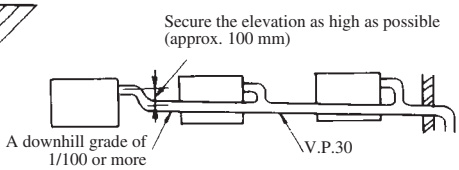
Duct form / Air volume / Item	Square duct
	Dimensions
m³/h(m³/min)	(mm × mm)
100	250 × 60
200	250 × 90
300	250 × 120
400	250 × 140
500	250 × 170
Section Ⓑ 600(10)	250 × 190
800	250 × 230
1,000	250 × 270
1,200(20)	250 × 310
1,400	250 × 350
1,600	250 × 390
1,800(30)	250 × 430
2,000	250 × 470
Section Ⓐ 2,400	250 × 560
3,000(50)	250 × 650
3,500	250 × 740
4,000	250 × 830
4,500	250 × 920
5,000	250 × 1000
5,500	250 × 1090
6,000(100)	250 × 1180

(d) Drain Piping

1) Drain piping should always be in a downhill grade (1/50~1/100) and avoid riding across an elevation or making traps.

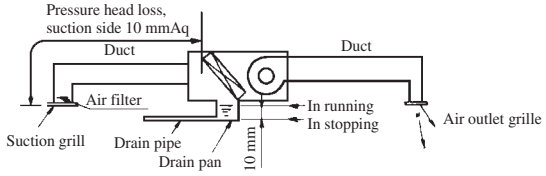






2) When connecting the drain pipe to unit, pay sufficient attention not to apply excess force to the piping on the unit side. Also, fix the piping at a point as close as possible to the unit.
3) For drain pipe, use hard PVC general purpose pipe VP-25(I.D.1″) which can be purchased locally.
4) When constructing drain piping for several units, position the common pipe about 100 mm below the drain outlet of each unit as shown in the sketch. Use VP-30 (11/4″) or thicker pipe this purpose.
5) Be sure to provide heat insulation to hard PVC pipes of indoor placement.
6) Do not ever provide an air vent.
7) Avoid postitioning the drain piping outlet at a place where generation of odor may be stimulated. Do not lead the drain piping direct into a sewer from where sulfur gas may generate.

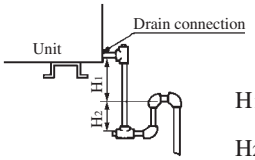
If the duct is connected and then the blower is operated, inside air pressure will become negative compared with the atmospheric pressure.



Example: If the pressure loss at the suction side, such as the suction grill, air filter and duct, is 100 Pa, the level of drain water will rise approx. 10 mm higher than the state of operation stop.

<Provision of trap>

Since the drain outlet is disposed at a position that makes the pressure negative, it is necessary to provide a trap (during the piping work) in order to prevent water leakage due to rising of water level in the drain pan.
Trap must be so constructed to facilitate cleaning. It should be better to employ a "T" joint as shown below. In addition, the height of trap should be as specified below. The trap should be provided close to the unit.



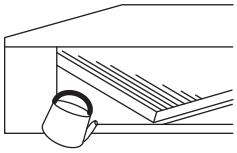
• Provide a trap on way of the drain pipe as shown at left.

H_1=100 mm or static pressure of blower
H_2=1/2 H_1 or 50 ~ 100 mm

(e) Drain Test

When the drain piping work is over, inject water to inspect if the piping is arranged properly or not.

○ Remove the side panel and supply gradually 1,000 cc of water to see if water is drained smoothly or not. Check also for water leakage.



(f) The fan controller kit for high static pressure duct. (Optional)

The way of installing the optional fan controller for high static pressure ducts. Install the controller in accordance with the following procedure.

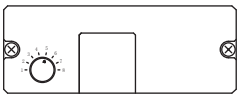
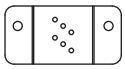
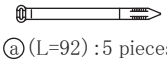
⚠ WARNING

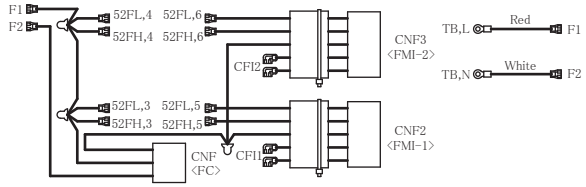
① Consult your dealer for the installation of the controller.
② Only qualified electrician must install the controller.
③ Remove the control box before the installation.
Before installing the product, take it out from the package and place it on the floor.
④ Be sure to turn off the power supply during installation.
Unless the above precautions are observed, it could cause electrical shocks or fire.

1) Applicable models and corresponding fan controller kit

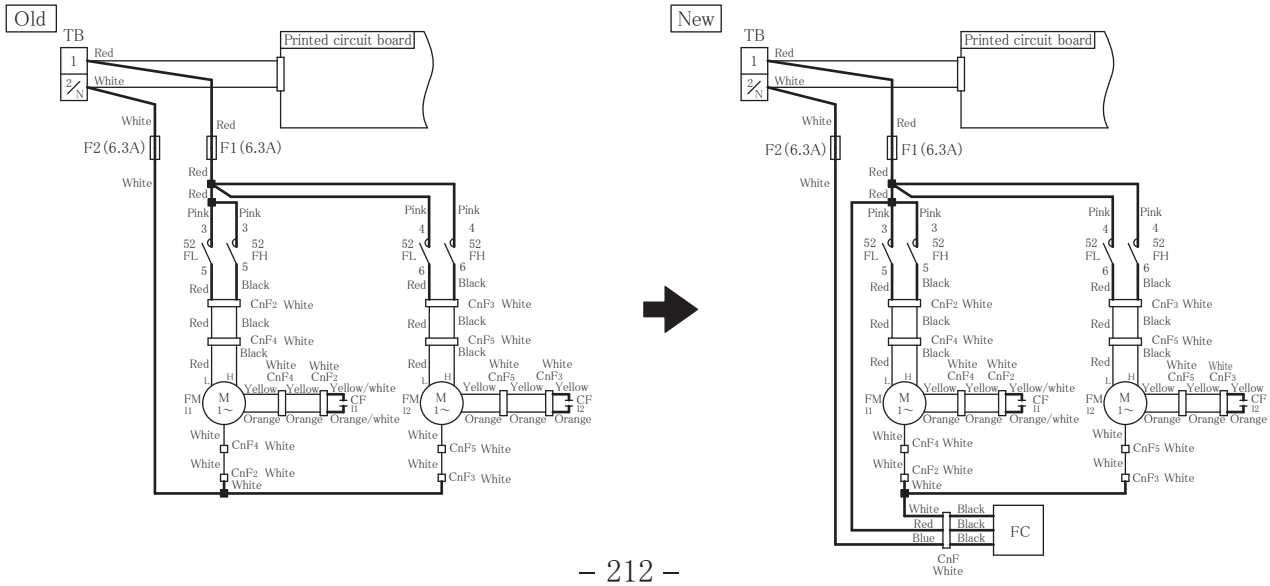
Model	FDU801R,1001R
Fan controller kit	U-FCR

2) Component parts list

Fan controller	Bracket	Band	Label
 1 piece	 1 piece	 ⓐ (L=92) : 5 pieces ⓑ (L=140) : 4 pieces	F1 (6.3A) F2 (6.3A) 1 piece each

Wiring	Tapping screw
	(M3 : 2 pcs.) (M4 : 2 pcs.) 4 pieces ※Screws removed during modification are reused.

3) Electric circuit diagram (Change the sections indicated with bald lines.)



＜Precautions for wiring＞

○ Connect wires correctly as shown by the electric wiring diagram. Be sure to tighten set screws firmly to prevent them generating heat or causing other troubles after becoming loose.

○ Number of wires connected to the terminal block must be 2 wires or less. Never connect 3 or more wires in any event.

4) Installation procedure

a) Taking out connectors CnF2 and CnF3 from the protection tubes (Fig.A), disconnect the connectors. (Fig.B-①)

b) Disconnecting wires at the outside of control box from the unit clamps (Fig.B-②), disassemble the control box from the unit. (Fig.B-③)

c) Remove the lid from the control box. (Fig.B-④)

⚠CAUTION Confirm that electricity has been dischaged before touching the capacitor terminals. There is risk of electric shocks.

d) Remove the capacitor, fuse and the wires indicated in the figure. (Fig.C)

e) When no hole to mount the capacity is provided on the box, bore a ϕ3 hole. (Fig.D)

f) Install the fuse and the label on the bracket. (Fig.F)

g) Install the capacitor, bracket (fuse) and fan controller. (Fig.G)

h) Referring to "3) Electric circuit diagram", connect wires as illustrated and fix with bands ⓐ. (Fig.G)

i) Reinstall the removed lid on the control box.

j) Install the control box in the reverse order of removal and hook the wires at the outside of box on the clamp.

k) Connect the connectors CnF2 and CnF3 and reinstall the protection tubes removed in the step a) above. (Fig.H)
(Install the protection tubes in a manner that they will shield wires completely.)

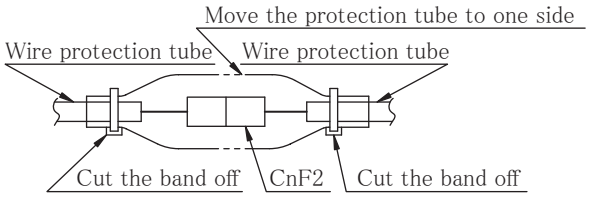


Fig.A (Same for CnF3)

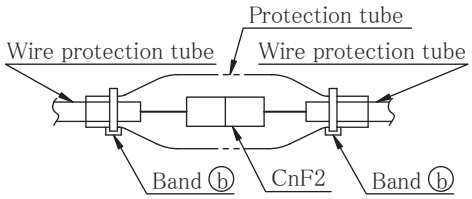


Fig.H (Same for CnF3)

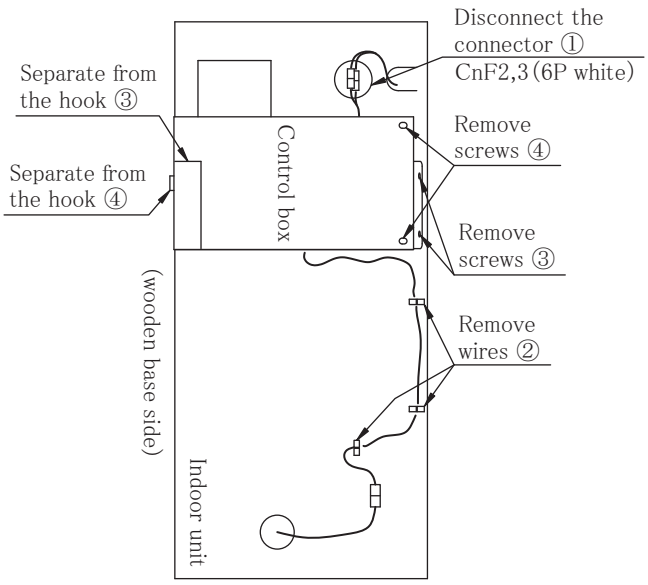


Fig.B

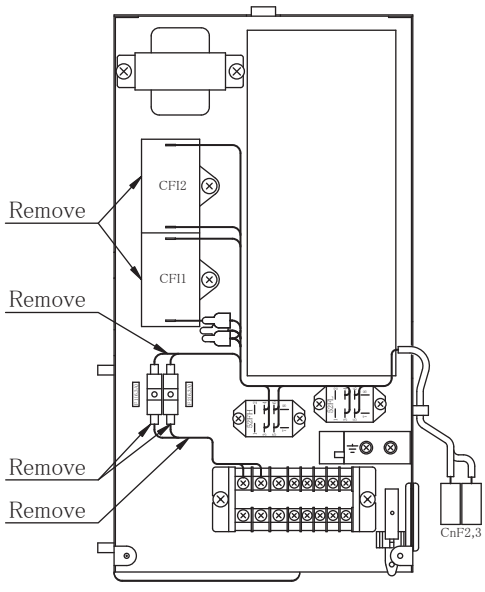


Fig.C

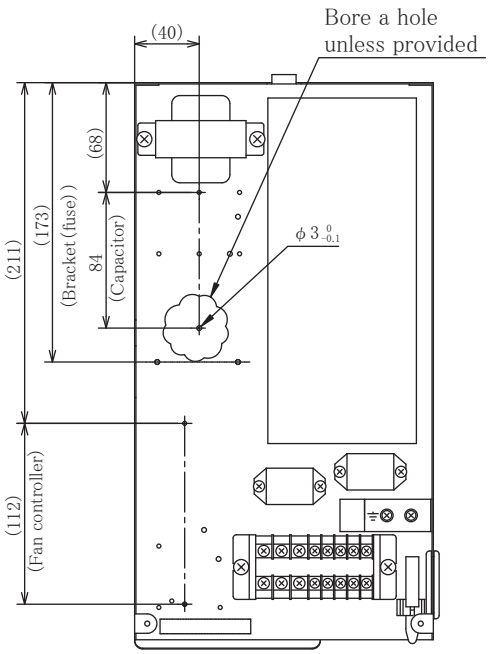


Fig.D

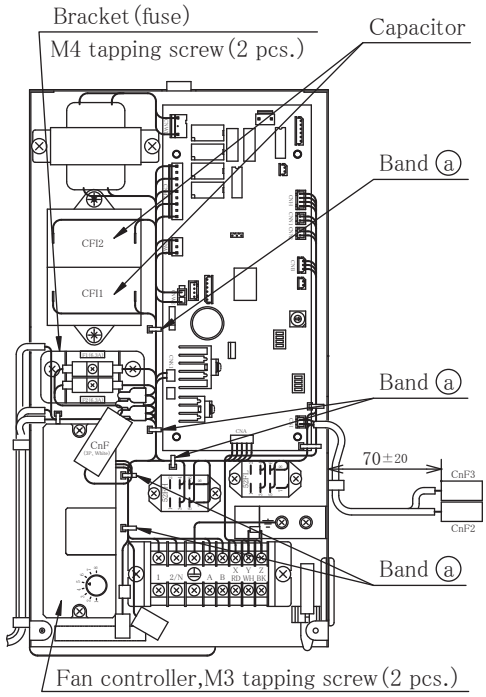


Fig.G

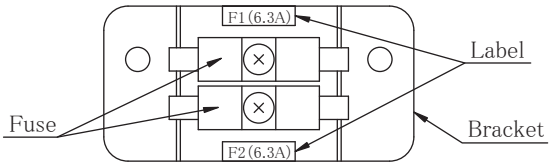


Fig.F

1.5.2 Installation of wired remote controller

(1) Selection of installation location

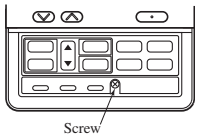
Avoid the following locations

(a) Direct sunlight.
(b) Close to heating device.
(c) Highly humid or water splashing area.
(d) Uneven surface.

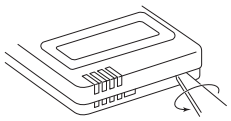
(2) Installation procedure

(a) Exposed fiting

1) Open the remote controller cover and unscrew the screw located beneath the switch.

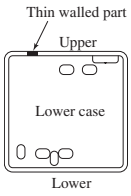


2) Open the remote controller case.



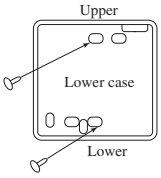
• Put a screw driver (flat-head) into the concavity made on the upper part of a remote controller and twist it lightly to open the casing.

3) The cord of a remote controller can only be pulled out in the upward direction.



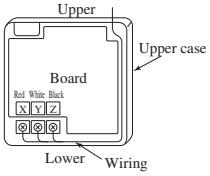
• Cut off with nippers or a knife a thin walled part made on the upper end of the rmote controller bottom casing, and then remove burrs with a file or the like.

4) Fix the remote controller bottom casing onto a wall with two wood screws supplied as accessories.



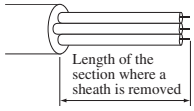
5) Connect the remote controller to the terminal block. Connect the terminals of the remote controller to the indoor unit with the same numbers. Because the terminal block has polarity, the device becomes inoperative if there are wrong connections.

Terminals: ⓧRed wire, ⓨWhite wire, ⓩBlack wire



• Use a cord of 0.3mm² (recommended) - 0.5mm² (maximum) for a remote controller cord. Remove a sheathe of the remote controller cord for the section laid within the remote controller casing.

The length of each wire that should be left after a sheath is removed is as follows:

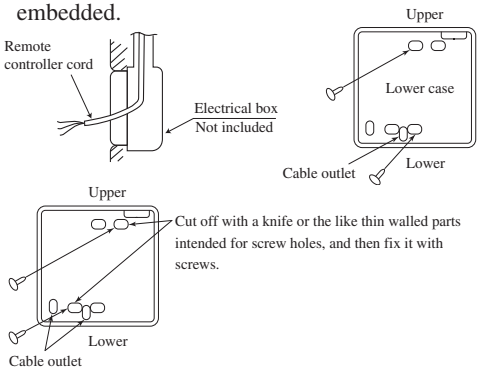


Black: 195mm, White: 205mm, Red: 125mm

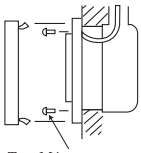
6) Replace the top casing as before.
7) Use a cord clamp to attach the remote controller cord to the wall.
8) Set the functions according to the types of indoor unit. See Section "Function Setting".

(b) Recessed fitting

1) The Electrical box and remote controller (shield wire must be use in case of extension) are first embedded.



2) Remote the upper case to the remote controller.
3) Attach the lower case to the Electricl box with two M4 screws. (Head diameter must be 8 mm). Choose either of the following two positions in fixing it with screws.
4) Connect the remote controller cord to the remote controller.
Refer to [Exposed fitting].
5) Installation work is completed by replacing the top casing onto the bottom casing as before.
6) Set the function switch according to the type of the indoor unit. (Refer to 227 page)



Precation in extending the remote controller cord

▶ Maximum total extension 600m.

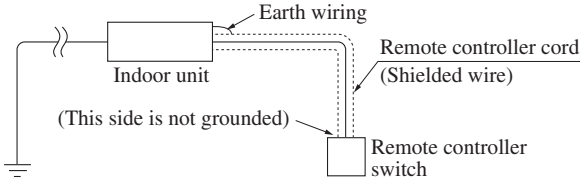
The cord should be a shielded wire.

• For all types : 0.3mm² × 3 cores

Note (1) Use cables up to 0.5mm² (maximum) for those laid inside the remote controller unit casing and connect to a different size cable at a vicinity point outside the remote controller unit, if necessary.

Within 100-200m……0.55 mm² × 3 cores
Within 300m……0.75 mm² × 3 cores
Within 400m……1.25 mm² × 3 cores
Within 600m……2.05 mm² × 3 cores

• The shielded wire should be grounded at one side only.



1.5.3 Installation of outdoor unit

Notabilia as a unit designed for R410A

- Do not use any refrigerant other than R410A. R410A will rise to pressure about 1.6 times higher than that of a conventional refrigerant.
- A unit designed for R410A has adopted a different size indoor unit service valve charge port and a different size check joint provided in the unit to prevent the charging of a wrong refrigerant by mistake. The processed dimension of the flared part of a refrigerant pipe and a flare nut's parallel side measurement have also been altered to raise strength against pressure. Accordingly, you are required to arrange dedicated R410A tools listed in the table on the right before installing or servicing this unit.
- Do not use a charge cylinder. The use of a charge cylinder will cause the refrigerant composition to change, which results in performance degradation.
- In charging refrigerant, always take it out from a cylinder in the liquid phase.
- All indoor units must be models designed exclusively for R410A. Please check connectable indoor unit models in a catalog, etc. (A wrong indoor unit, if connected into the system, will impair proper system operation)

	Dedicated R410A tools
a)	Gauge manifold
b)	Charge hose
c)	Electric scale for refrigerant charging
d)	Torque wrench
e)	Flare tool
f)	Protrusion control copper pipe gauge
g)	Vacuum pump adapter
h)	Gas leak detector

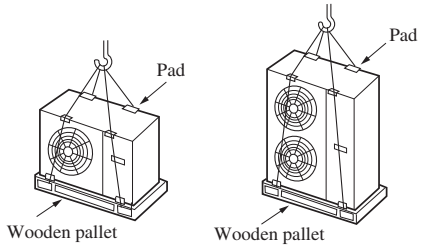
(1) Haulage and installation (Take particular care in carrying in or moving the unit, and always perform such an operation with two or more persons.)

⚠ CAUTION

When a units hoisted with slings for haulage, take into consideration the offset of its gravity canter position. If not properly balanced, the unit can be thrown off-balance and fall.

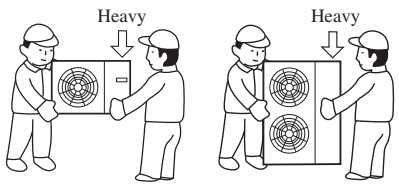
(a) Delivery

1) Deliver the unit as close as possible to the installation site before removing it from the package.
2) When some compelling reason necessitates the unpacking of the unit before it is carried in, use nylon slings or protective wood pieces so as not to damage the unit by ropes lifting it.



(b) Portage

The right hand side of the unit as viewed from the front (diffuser side) is heavier. A person carrying the right hand side must take heed of this fact. A person carrying the left hand side must hold with his right hand the handle provided on the front panel of the unit and with his left hand the corner column section.

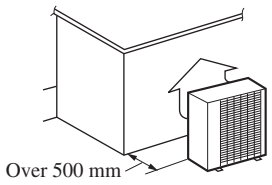


(c) Selecting the installation location

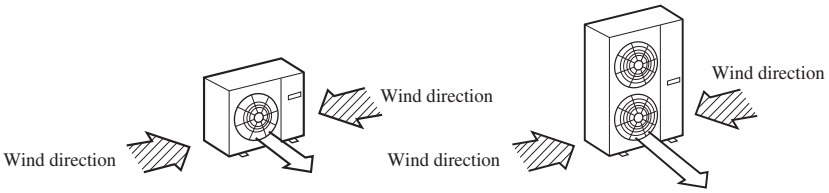
Be careful of the following conditions and choose an installation place.

- ◯ Where air is not trapped.
- ◯ Where the installation fittings can be firmly installed.
- ◯ Where wind does not hinder the intake and outlet air.
- ◯ Out of the heat range of other heat sources.
- ◯ A place where stringent regulation of electric noises is applicable.
- ◯ Where it is safe for the drain water to be discharged.
- ◯ Where noise and hot air will not bother neighboring residents.
- ◯ Where snow will not accumulate.
- ◯ Where strong winds will not blow against the outlet pipe.
- ◯ A place where no TV set or radio receiver is placed within 5 m.
  (If electrical interference is caused, seek a place less likely to cause the problem)
- ◯ Where it is likely that the unit is subjected to strong winds, provide wind guards according to the following guidelines.
  Strong winds can cause performance degradation, an accidental stop due to a rise of high pressure and broken fan.

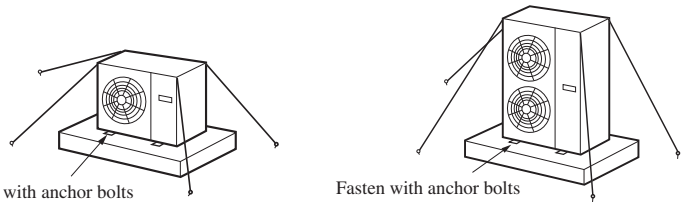
1) Place the unit outlet pipe perpendicular to the wind direction.



2) Please install so the direction of the air from the blowing outlet will be perpendicular to the direction of the wind.



3) When the foundation is not level, use wires to tie down the unit.

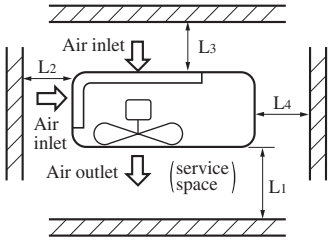


(d) Installation space

- Walls surrounding the unit in the four sides are not acceptable.
- There must be a 1-meter or larger space in the above.
- Where a danger of short-circuting exists, install guide louvers.
- When more than one unit are installed, provide sufficient intake space consciously so that short-circuiting may not occur.
- Where pilling snow can bury the outdoor unit, provide proper snow guards.

Unit: mm

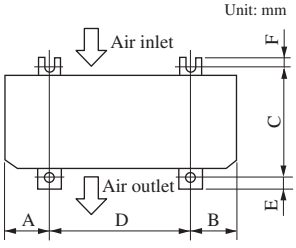
Installation example / Distance	FDCVA151~251			FDCVA302			FDCVA402~100z		
	I	II	III	I	II	III	I	II	III
L1	Open space	280	280	Open space	Open space	500	Open space	Open space	500
L2	100	75	Open space	300	250	Open space	300	5	Open space
L3	100	80	80	100	150	100	150	300	150
L4	250	Open space	250	250	250	250	5	5	5



(e) Installation

① Anchor bolt fixed position

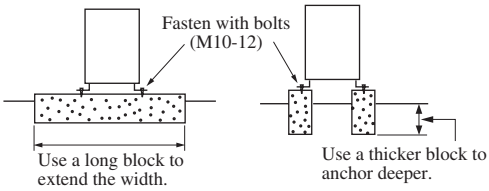
Unit: mm



Unit: mm

Model / Item	A	B	C	D	E	F
FDCVA151~251	106	164	312.5	510	14	13.5
FDCVA302	150	150	380	580	19	19
FDCVA402~1002	190	200	410	580	20	20

② Notabilia for installation



- In installing the unit, fix the unit's legs with bolts specified on the left.
- The protrusion of an anchor bolt on the front side must be kept within 15 mm.
- Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
- Refer to the left illustrations for information regarding concrete foundations.
- Install the unit in a level area. (With a gradient of 5 mm or less.)
- Improper installation can result in a compressor failure, broken piping within the unit and abnormal noise generation.

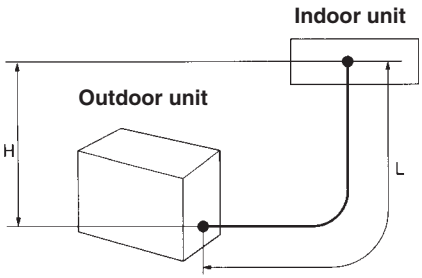
(f) To run the unit for a cooling operation,when the outdoor temperature is -5˚C or lower. Please equip a flex flow adapter and a snow guard hood (option) on the unit.

(2) Refrigerant piping work

Select the piping specification to fit the specification of indoor unit and installation location.

(a) Decision of piping specification

(i) Single type



Maximum one way length

FDCVA151~251 : L=40 m or less

FDCVA302~602 : L=50 m or less

FDCVA802,1002 : L=70 m or less

Height difference

- When the position of outdoor unit is higher than that of the indoor unit, keep the difference H=30 m or less.
- When the position of outdoor unit is lower than that of the indoor unit, keep the difference H=15 m or less.

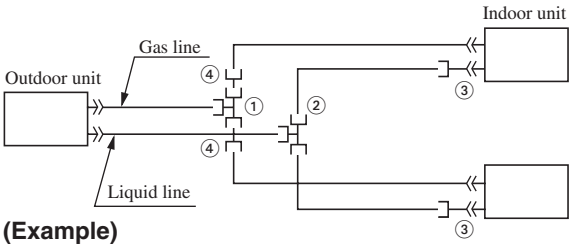
Piping specification

Unit : mm

Outdoor unit model	Gas pipe	Liquid pipe
FDCVA151,201	ϕ 12.7 × t 0.8	ϕ6.35 × t 0.8
FDCVA251	ϕ15.88 × t 1.0	ϕ6.35 × t 0.8
FDCVA302~602	ϕ15.88 × t 1.0	ϕ9.52 × t 0.8
FDCVA802	ϕ 25.4 × t 1.0	ϕ9.52 × t 0.8
FDCVA1002	ϕ 25.4 × t 1.0	ϕ12.7 × t 0.8

(ii) Twin type

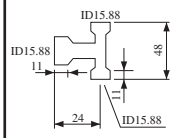
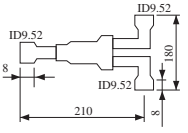
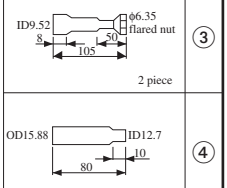
Models FDCVA302~602 [Branch pipe set : DIS-WA1]



(Example)

Item / Model	Indoor unit combinations	Liquid pipe		Gas pipe	
		Main pipe	Branch pipe	Main pipe	Branch pipe
FDCVA302	15 + 15	ϕ 9.52 × t 0.8	ϕ 9.52 × t 0.8	ϕ 15.88 × t 1.0	ϕ12.7 × t 0.8
FDCVA402	20 + 20				
FDCVA502	25 + 25				ϕ 15.88 × t 1.0
FDCVA602	30 + 30				

Chart of shapes of branch piping parts (DIS-WA1)

Gas pipe	Mark	Liquid pipe	Mark	Reducer	Mark
	①		②		③ ④

Notes (1) ① to ④ in the drawing include parts provided in the branch piping set. It shows the codes for the shapes of different-diameter connections.

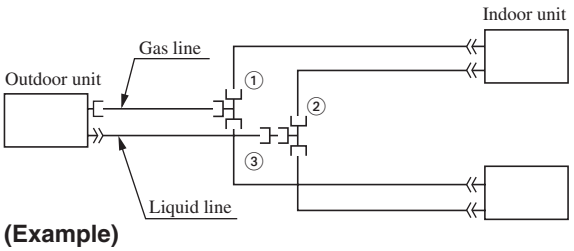
(2) Branch piping should always be arranged to have level or perpendicular branch.

(See the next page.)

Notes (1) If you are using this model in combination with the 15~25 models indoor units, use the irregular fittings ③ supplied with the branch piping set and make the branch piping (branch ~ indoor unit) liquid piping size ϕ9.52.

(2) Mark is ④ to FDCVA302,402 only.

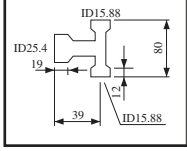
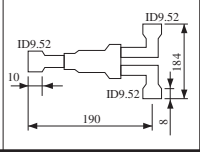
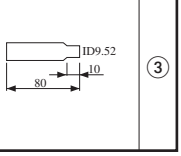
Models FDCVA802, 1002 [Branch pipe set : DIS-WB1]



(Example)

Item / Model	Indoor unit combinations	Liquid pipe		Gas pipe	
		Main pipe	Branch pipe	Main pipe	Branch pipe
FDCVA802	40 + 40	ϕ 9.52 × t 0.8	ϕ 9.52 × t 0.8	ϕ 25.4 × t 1.0	ϕ 15.88 × t 1.0
FDCVA1002	50 + 50	ϕ 12.7 × t 0.8			

Chart of shapes of branch piping parts (DIS-WB1)

Gas pipe	Mark	Liquid pipe	Mark	Reducer	Mark
	①		②		③

Notes (1) ① to ③ in the drawing include parts provided in the branch piping set. It shows the codes for the shapes of different-diameter connections.

(2) Branch piping should always be arranged to have level or perpendicular branch.

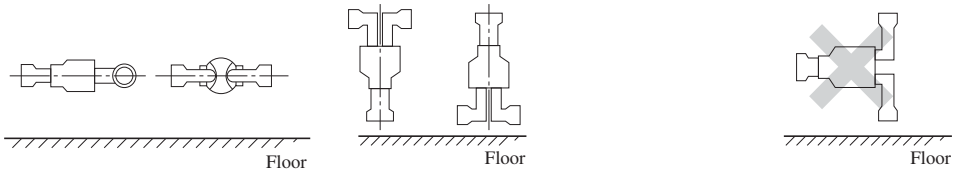
(See the next page.)

Notes (1) For model FDCVA802, always use ø12.7 mm liquid pipes, when the length of the main "L" exceeds 40 m. If ø9.52 mm pipes are used in an installation having over 40 m piping, they can cause performance degradation and/or water leaks from an indoor unit.
When the pipes length measures 60 m or longer for the model FDCVA802, we recommend the use of a ø12.7 mm liquid main.

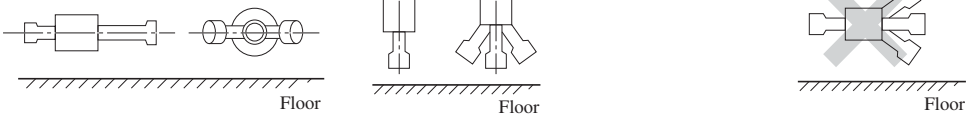
(2) One-way pipe length should measure 5 m at a minimum. If the pipe length measures less than 5 m, then reduce the quantity of charged refrigerant. If you need to recover or recharge refrigerant, contact our sales agent found in your neighborhood.

- **The branch piping (both gas and liquid lines) should always be arranged to have a level or perpendicular branch.**

< 2-Way Branch >

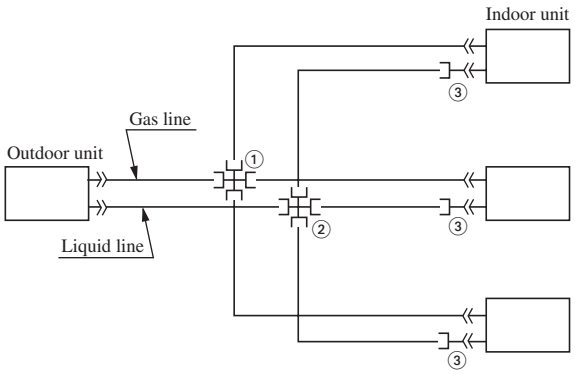


< 3-Way Branch >



(iii) Triple type

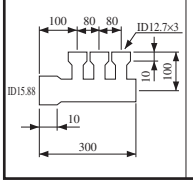
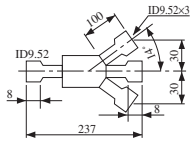
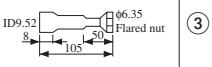
Model FDCVA602 [Branch pipe set : DIS-TA1]



Item / Model	Indoor unit combinations	Liquid pipe		Gas pipe	
		Main pipe	Branch pipe	Main pipe	Branch pipe
FDCVA602	20 + 20 + 20	ϕ 9.52 × t 0.8	ϕ 9.52 × t 0.8	ϕ 15.88 × t 1.0	ϕ 12.7 × t 0.8

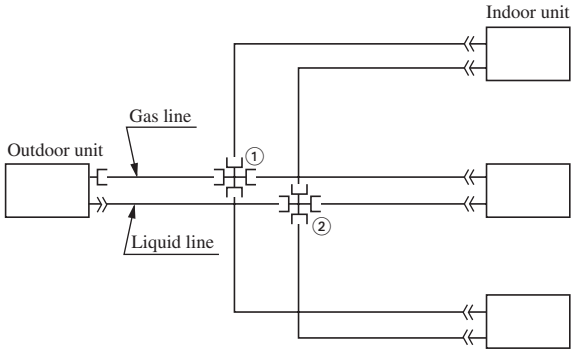
Notes (1) Use the irregular fittings ③ supplied with the branch piping set on the indoor unit side, and make the branch piping (branch ~ indoor unit) liquid piping size ϕ9.52.

Chart of shapes of branch piping parts (DIS-TA1)

Gas pipe	Mark	Liquid pipe	Mark	Reducer	Mark
	①		②		③

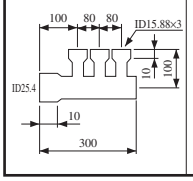
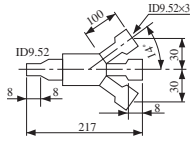
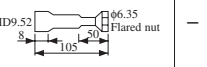
Notes (1) ① to ③ in the drawing include parts provided in the branch piping set. It shows the codes for the shapes of different-diameter connections.
(2) Branch piping should always be arranged to have level or perpendicular branch.
(See the above figure.)

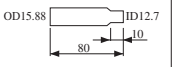
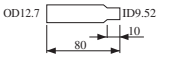
Model FDCVA802 [Branch pipe set : DIS-TB1]



Item / Model	Indoor unit combinations	Liquid pipe		Gas pipe	
		Main pipe	Branch pipe	Main pipe	Branch pipe
FDCVA802	30 + 30 + 30	ϕ 9.52 × t 0.8	ϕ 9.52 × t 0.8	ϕ 25.4 × t 1.0	ϕ 15.88 × t 0.8

Chart of shapes of branch piping parts (DIS-TB1)

Gas pipe	Mark	Liquid pipe	Mark	Reducer	Mark
	①		②		–

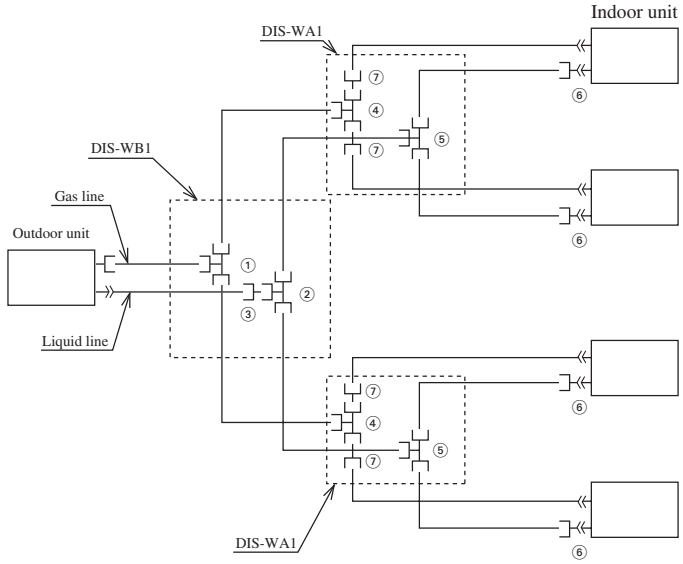
Reducer	Mark	Reducer	Mark
	–		–

Notes (1) ① to ② in the drawing include parts provided in the branch piping set. It shows the codes for the shapes of different-diameter connections.
(2) Branch piping should always be arranged to have level or perpendicular branch.
(See the above figure.)

Notes (1) For model FDCVA802, always use ø12.7 mm liquid pipes, when the length of the main "L" exceeds 40 m. If ø9.52 mm pipes are used in an installation having over 40 m piping, they can cause performance degradation and/or water leaks from an indoor unit.
When the pipe length measures 60 m or longer for the model FDCVA802, we recommend the use of a ø12.7 mm liquid main.
(2) One-way pipe length should measure 5 m at a minimum. If the pipe length measures less than 5 m, then reduce the quantity of charged refrigerant. If you need to recover or recharge refrigerant, contact our sales agent found in your neighborhood.

(iv) Double twin type

Models FDCVA802, 1002 [Branch pipe set : DIS-WA1 × 2set, DIS-WB1 × 1set]



Item / Model	Indoor unit combinations	Liquid pipe			Gas pipe		
		Main pipe	1st branch pipe	2nd branch pipe	Main pipe	1st branch pipe	2nd branch pipe
FDCVA802	20 + 20 + 20 + 20	ϕ 9.52 × t 0.8	ϕ 9.52 × t 0.8	ϕ 9.52 × t 0.8	ϕ 25.4 × t 1.0	ϕ 15.88 × t 1.0	ϕ 12.7 × t 0.8
FDCVA1002	25 + 25 + 25 + 25	ϕ 12.7 × t 0.8					ϕ 15.88 × t 1.0

Notes (1) Use the irregular fittings ⑥ supplied with the branch piping set on the indoor unit side, and make the branch piping (branch ~ indoor unit) liquid piping size ϕ9.52.
(2) Mark is ⑦ to FDCVA802 only.

Chart of shapes of branch piping parts (DIS-WB1)

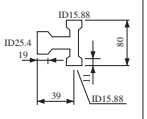
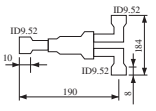
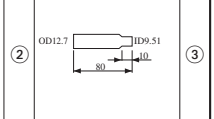
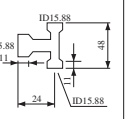
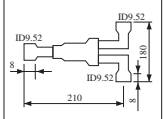
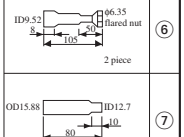
Gas pipe	Mark	Liquid pipe	Mark	Reducer	Mark
	①		②		③

Chart of shapes of branch piping parts (DIS-WA1)

Gas pipe	Mark	Liquid pipe	Mark	Reducer	Mark
	④		⑤		⑥ ⑦

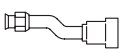
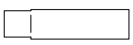
Notes (1) ① to ⑦ in the drawing include parts provided in the branch piping set. It shows the codes for the shapes of different-diameter connections.
(2) Branch piping should always be arranged to have level or perpendicular branch. (Refer to the 216 page for details.)
(3) Mark ③ shows for the FDCVA802 model only.

Notes (1) For model FDCVA802, always use ϕ12.7 mm liquid pipes, when the length of the main "L" exceeds 40 m. If ϕ9.52 mm pipes are used in an installation having over 40 m piping, they can cause performance degradation and/or water leaks from an indoor unit.
When the pipes length measures 60 m or longer for the model FDCVA802, we recommend the use of a ϕ12.7 mm liquid main.
(2) One-way pipe length should measure 5 m at a minimum. If the pipe length measures less than 5 m, then reduce the quantity of charged refrigerant. If you need to recover or recharge refrigerant, contact our sales agent found in your neighborhood.

(b) How to use pipe reducer (Attached to FDCVA802, 1002 only)

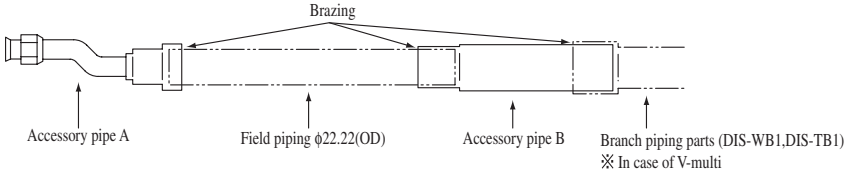
- ϕ22.22 (OD) size of the refrigerant gas pipe can be used by using the accessory pipe B, although ϕ25.4 (OD) size of the refrigerant gas pipe is standard.
  (When ϕ25.4 (OD) size of the refrigerant gas pipe is used, the accessory pipe B is unnecssary.)
  (∗) OD: Outer diameter.

● This accessory pipe includes the following parts.

A	B
ϕ19.05 (Flare connection)  ID22.22	ID22.22  OD25.4

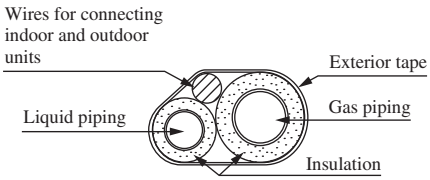
(∗) ID: Inner diameter.

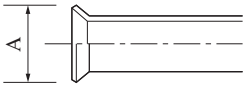
● Install this accessory pipe according to the following.



(c) Points for attention in installing refrigerant piping

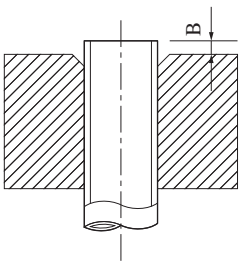
1) Use pipes made of the following material
   Material: Phosphorus deoxidized copper seamless pipes (C1220T, JIS H3300)
2) Please dress the refrigerant piping (both gas and liquid pipes) with a heat insulating material for prevention of dew condensation. Improper heat insulation incapable of preventing dew condensation can cause the leaking or dripping of water and a resultant soaking of household effects.
3) Use only a good heat insulating material (120°C or higher) for heat insulation. A poor heat insulating material offers only poor heat insulation and can cause cable deterioration.
   a) The gas pipes can cause dew condensation during a cooling operation, which may become drain water causing a water-leak accident, or a risk of burns during a heating operation, if touched accidentally, with its surface reaching a high temperature because of discharged gas flowing inside. So, do not fail to dress it with a heat insulating material to prevent such mishap.
   b) Dress the flare joints of the indoor units with a heat insulating material (pipe covers) (for both gas and liquid pipes).
   c) Dress both gas and liquid pipes with a heat insulating material. In doing so, leave no gaps between the pipe and the heat insulating material and wrap them, together with the connecting cable, with a dressing tape.
   d) If the unit is used in a place where dew point in the ambient atmosphere is 28ºC or higher, and the relative humidity is 80% or higher, dress 20 mm or more of insulation.
4) When you need to bend a pipe, bend it to the largest possible radius (R100-R150) permitted. Do not bend a pipe repeatedly in an effort to shape it appropriately.
5) In laying pipes, take care to avoid debris, chips or water from entering the piping system.
6) A unit and a refrigerant pipe are to be flare connected. Flare a pipe after you have attached a flare nut to the pipe. The dimensions of flaring for R410A are different from those for the conventional R407C refrigerant. Although we recommend the use of flare tools developed specifically for R410A, conventional flare tools can also be used, if the measurement of protrusion B is adjusted with a protrusion control copper pipe gauge.
7) Tighten a flare joint securely with double spanners. Observe the following tightening torque values for flare nuts:
8) A branching pipe set (option part supplied separately) and refrigerant piping should be connected by brazing.
9) In brazing pipes, keep nitrogen gas flowing inside the pipes so that an oxide film may not form on the inner surfaces of the pipes.
10) Tighten a flare joint securely with a double spanner.
    a) Do not apply force beyond proper fastening torque in tightening the flare nut.
    b) Fix both liquid and gas service valves at the valve main bodies as illustrated on the lower, and then fasten them, applying appropriate fastening torque.





Flared pipe end: A (mm)

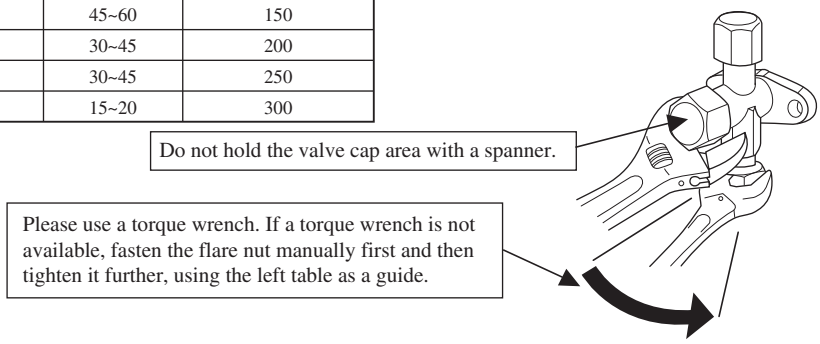
Copper pipe outer diameter	A $^{0}_{-0.4}$
ø6.35	9.1
ø9.52	13.2
ø12.7	16.6
ø15.88	19.7



Copper pipe protrusion for flaring: B (mm)

Copper pipe outer diameter	In the case of a rigid (clutch) type	
	With an R410A tool	With a conventional tool
ϕ 6.35	0~0.5	0.7~1.3
ϕ 9.52		
ϕ 12.7		
ϕ 15.88		

Operation valve size (mm)	Tightening torque (N·m)	Tightening angle (°)	Recommended length of a tool handle (mm)
ϕ 6.35 (1/4")	14~18	45~60	150
ϕ 9.52 (3/8")	34~42	30~45	200
ϕ 12.7 (1/2")	49~61	30~45	250
ϕ 15.88 (5/8")	68~82	15~20	300

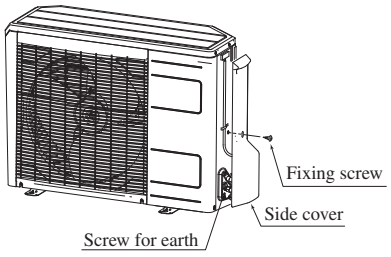

Do not hold the valve cap area with a spanner.
Please use a torque wrench. If a torque wrench is not available, fasten the flare nut manually first and then tighten it further, using the left table as a guide.

(d) How to remove the side cover

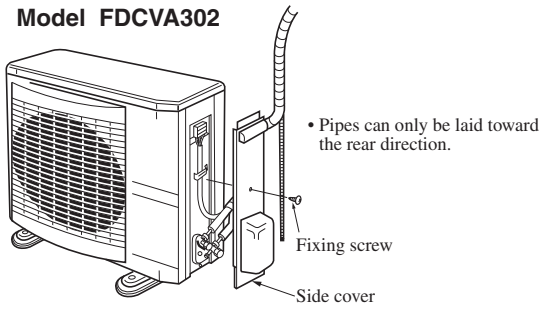
- **Models FDCVA151 ~ 302**

First unscrew four screws holding the side cover in place, pull down the cover toward the direction indicated by the arrow, and then pull it toward you to remove it from the casing.

Models FDCVA151, 201, 251

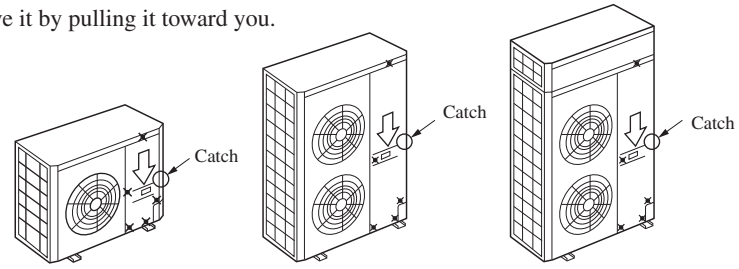


Model FDCVA302



- **Models FDCVA402 ~ 1002**

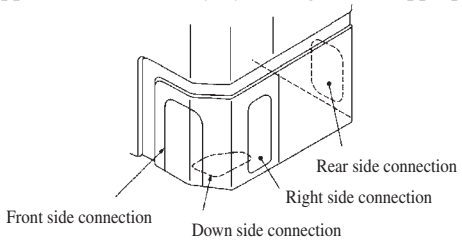
First remove the five screws (× mark) of the service panel and push it down into the direction of the arrow mark and then remove it by pulling it toward you.



Models FDCVA402~602 Model FDCVA802 Model FDCVA1002

(e) Refrigerant pipe connection (Models FDCVA402 ~ 1002 only)

1) The pipe can be laid in any of the following directions: side right, front, rear and downward.
2) Remove a knock-out plate provided on the pipe penetration to open a minimum necessary area and attach an edging material supplied as an accessory by cutting it to an appropriate length before laying a pipe.



(f) Method for connecting the accessory pipe (Models FDCVA802, 1002 only)

Be sure to use the accessory pipe to connect the service valve on the gas side with the field pipe.

1) Referring to Table ① and Table ② , prepare the straight pipe and the elbow in the field, which are used in the construction examples Ⓐ~Ⓓ applicable to the connecting direction.

Table ① Parts used for the connecting pipe assembly

No.	Name	Qty.	Remarks
1	Accessory pipe A	1	Accessories
2	Straight pipe ①	1	Procured in the field
3	Straight pipe ②	1 or 0	Procured in the field (Not required for downward direction)
4	Elbow	1 or 0	Procured in the field (Not required for downward direction)

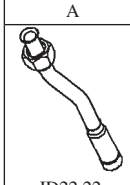
A	B
	
ID22.22 1 pc	OD25.4 1 pc

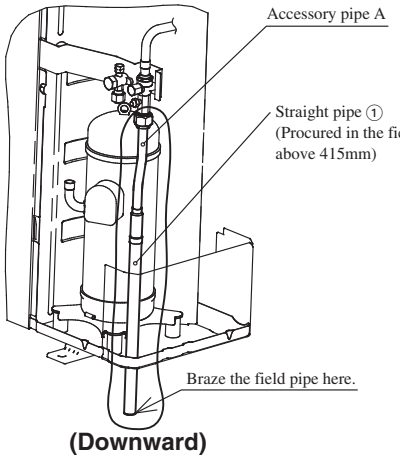
Table ② Length of the straight pipe (prepared in the field)

	Pipe size	Ⓐ Downward	Ⓑ Forward	Ⓒ Rightward	Ⓓ Backward
Straight pipe ①	ϕ22.22 × T1.6	above 415mm	185~235mm	185~235mm	185~235mm
Straight pipe ②	ϕ22.22 × T1.6	–	above 125mm	above 125mm	above 405mm

Notes (1) Be sure to use pipes of 1/2H material, and wall thickness above 1mm. (Pressure resistance of O-type pipe is not enough)
(2) Switch ON SW5-1 on the control PCB, if O-type pipe must be used and bent with the bender.
During heating operation, the high-pressure protection may be actuated under the condition lower than the normal pressure, and the heating capacity may decrease.

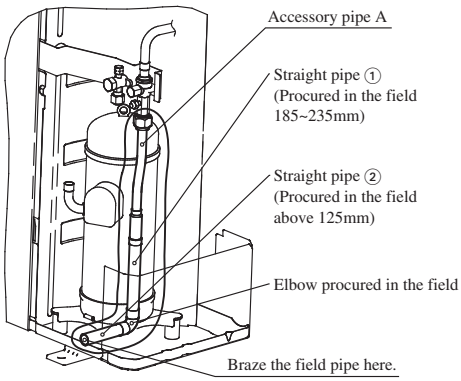
2) Firstly, use the accessory pipe to assemble the connecting pipe assembly outside the outdoor unit.
As shown in the figures of installation examplés Aã D applicable to the connecting direction (chain double dashed line), braze the accessory pipe and the parts prepared in the above 1).

Installation example Ⓐ



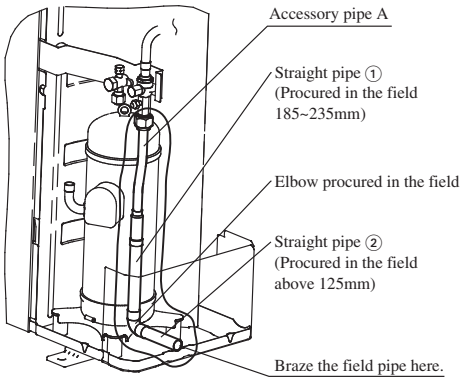
(Downward)

Installation example Ⓑ



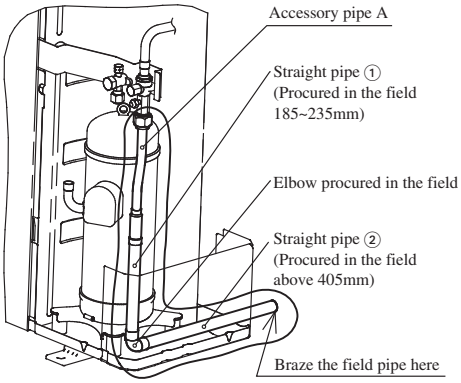
(Forward)

Installation example Ⓒ



(Rightward)

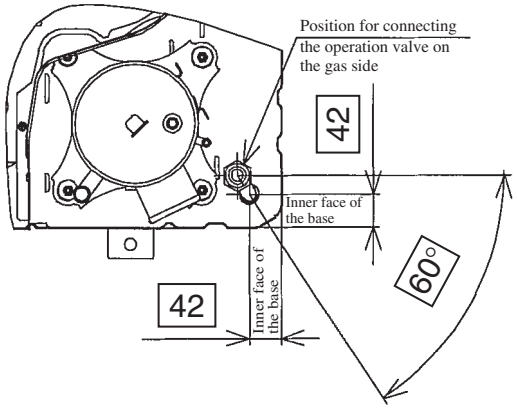
Installation example Ⓓ



(Backward)

● Orientation of the accessory pipe must comply with the dimensions with ▭ of Figure ①.

Position for the accessory pipe (Figure ①)

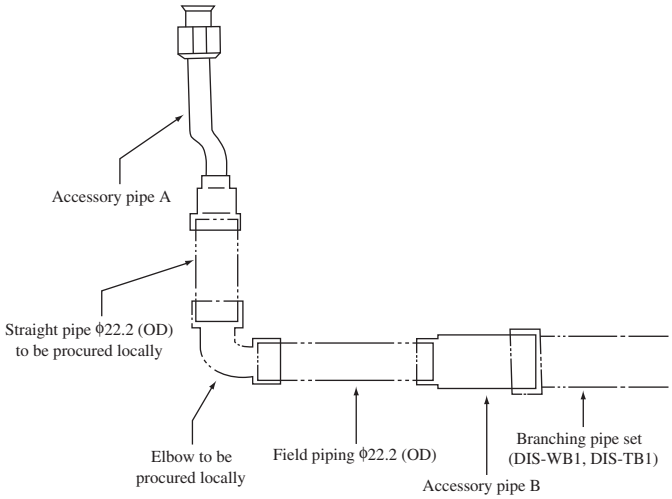


3) After assembly of the connecting pipe, connect it to the operation valve on the gas side inside the outdoor unit.
Tighten the flare nut with appropriate torque.

Appropriate torque	
ϕ19.05	100~120N·m

4) After connection of the connecting pipe assembly to the operation valve on the gas side, braze the connecting pipe assembly and the field pipe.

- Branching pipe set can be used by using the accessory pipe B. When ϕ22.22(OD) size of the indoor unit gas pipe is used, the accessory pipe B is unnecessory.



※In case of V-multi

About brazing

● **Be sure to braze while supplying nitrogen gas.**

If no nitrogen gas is supplied, a large amount of impurity (oxidized film) will be generated, which may clog the capillary tube and the expansion valve, resulting in fatal malfunction.

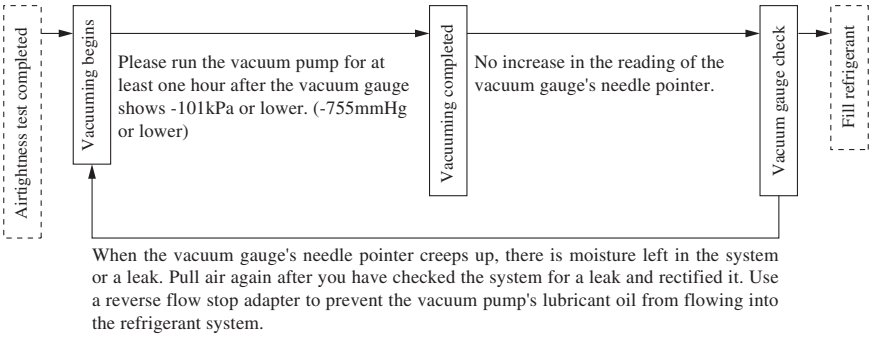
(3) Air tightness test and air purge

- Always use a vacuum pump to purge air trapped within an indoor and the refrigerant piping**.**

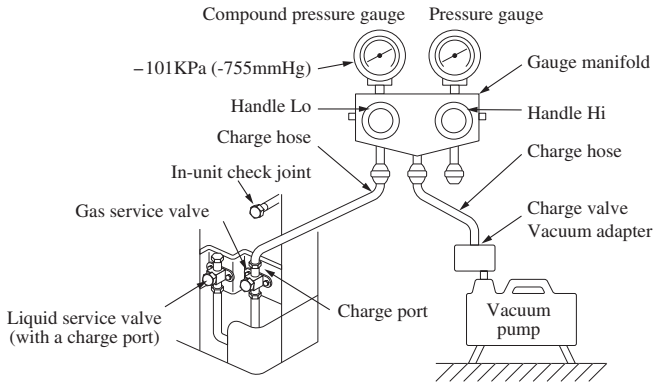
(a) Air tightness test

1) When all the flare nuts on both indoor and outdoor unit sides are fastened. Conduct an air-tightness test from the service valves (on both liquid and gas sides) closed tightly to check whether the system has no leaks.
2) Use nitrogen gas in the air-tightness test. Do not use gas other than nitrogen gas under any circumstances.
   Conduct the air-tightness test by applying 4.15MPa of pressure.
3) Do not apply the specified pressure at once, but increase pressure gradually.
   a) Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes to see if the pressure drops.
   b) Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes to see if the pressure drops.
   c) Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
   d) If the pressure does not drop after the units is left for approximately one day, the airtighteness is acceptable.
   When the ambient temperature changes 1˚C, the pressure also changes approximately 0.01 MPa. The pressure. if changed, should be compensated for.

(b) Air purge


Airtightness test completed
Vacuuming begins
Please run the vacuum pump for at least one hour after the vacuum gauge shows -101kPa or lower. (-755mmHg or lower)
Vacuuming completed
No increase in the reading of the vacuum gauge's needle pointer.
Vacuum gauge check
Fill refrigerant
When the vacuum gauge's needle pointer creeps up, there is moisture left in the system or a leak. Pull air again after you have checked the system for a leak and rectified it. Use a reverse flow stop adapter to prevent the vacuum pump's lubricant oil from flowing into the refrigerant system.

When a vacuum air purge is completed, remove the valve rod cap nuts and open the service valves (both liquid and gas sides) as illustrated below. After you have made sure that the valves are in the full-open position, lighten the cap nuts (for the valve rods and charge ports).



- You can purge air with either liquid service valve or gas service valve.

(4) Refrigerant charge

(a) Please calculate a required refrigerant charge volume from the following table.

- **Models FDCVA151 ~ 251**

Item \ Model	FDCVA151, 201	FDCVA251
Factory Charge Amount (for 30 m of pipe) (kg)	1.55	1.75
Standard Charge Amount (for 15 m of pipe) (kg)	1.25	1.45
Additional Charge Amount (for each 1 m of piping) (kg/m)	0.020	

(Example) If the FDCVA201 model is newly installed and the piping length is 40 m.
Additional Charge Amount: 0.2 kg = (40 – 30) m × 0.020 kg/m

- **If the system is recharged during servicing, etc., recharge in accordance with the following.**
  If the piping length is 15 m or less, recharge the system with the standard charge in the above table. If the piping length is greater than 15 m, charge with the standard charge plus an additional charge amount corresponding to the length of piping that exceeds 15 m.
  (Example) If the model FDCVA201, with a piping length of 40 m is being recharged:
  Recharge Amount: 1.75 kg = 1.25 kg + (40 – 15) m × 0.020 kg/m

- **Models FDCVA302 ~ 1002**

Item / Model	Standard refrigerant charge volume (kg)	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
FDCVA302	1.15	0.06	2.95	30
FDCVA402	2.0		3.8	
FDCVA502				
FDCVA602				
FDCVA802	3.6	Liquid piping ø9.52 (mm) : 0.06	5.4	
FDCVA1002	3.6	Liquid piping ø12.7 (mm) : 0.12	7.2	

1) A standard refrigerant charge volume means a refrigerant charge volume for an installation with 0 m long refrigerant piping.
2) This unit contains factory charged refrigerant covering 30 m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 30 m refrigerant piping. When refrigerant piping exceeds 30 m, please additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 30 m.

Formula to calculate the volume of additional refrigerant required

Model FDCVA302~602		Additional charge volume (kg) = [Main length (m) - Factory charged volume 30 (m)] × 0.06 (kg/m) + Total length of branch pipes (m) × 0.06 (kg/m)
Model FDCVA802	In the case of ø9.52 mm liquid piping	
	In the case of ø12.7 mm liquid piping	Additional charge volume (kg) = [Main length (m) - Factory charged volume 30 (m)] × 0.12 (kg/m) + Total length of branch pipes (m) × 0.06 (kg/m)
Model FDCVA1002		

Notes (1) When an additional charge volume calculation result is negative, it is not necessary to charge refrigerant additionally.

(b) Charging refrigerant

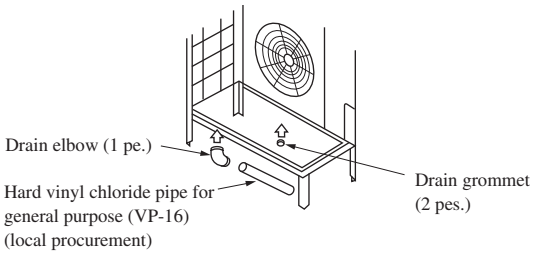
1) Since R410A refrigerant must be charged in the liquid phase, you should charge it, keeping the container cylinder upside down or using a refrigerant cylinder equipped with a siphon tube.
2) Charge refrigerant always from the liquid side service port with the service valve shut. When you find it difficult to charge a required amount, fully open the outdoor unit valves on both liquid and gas sides and charge refrigerant from the gas (suction) side service port, while running the unit in the cooling mode. In doing so, care must be taken so that refrigerant may be discharged from the cylinder in the liquid phase all the time. When the cylinder valve is throttled down or a dedicated conversion tool to change liquid-phase refrigerant into mist is used to protect the compressor, however, adjust charge conditions so that refrigerant will gasify upon entering the unit.
3) In charging refrigerant, always charge a calculated volume by using a scale to measure the charge volume.
4) When refrigerant is charged with the unit being run, complete a charge operation within 30 minutes. Running the unit with an insufficient quantity of refrigerant for a long time can cause a compressor failure.

PLEASE NOTE Please put down the refrigerant volume calculated from the pipe length onto the caution label attached on the back side of the service panel (Models 151 ~ 251, 302 only: side cover).

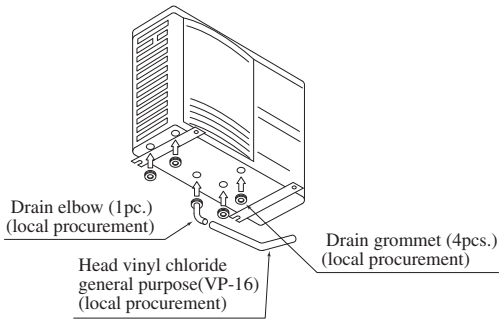
(5) Drain piping work

- Execute drain piping by using a drain elbow and drain grommets supplied separately as optional parts, where water drained from the outdoor unit is a problem.
- ○ There are 3 drain holes provided on the bottom plate of an outdoor unit to discharge condensed water.
- ○ When condensed water needs to be led to a drain, etc., install the unit on a flat base (supplied separately as an optional part) or concrete blocks.
- ○ Connect a drain elbow as shown in the illustration and close the other two drain holes with grommets.

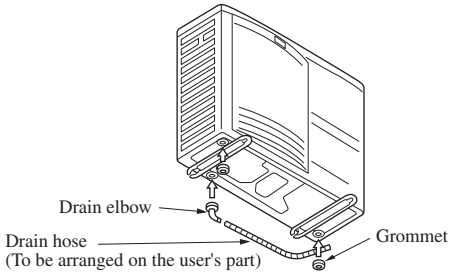
● Models FDCVA402 ~ 1002



● Models FDCVA151 ~ 251


Drain elbow (1pc.) (local procurement)
Drain grommet (4pcs.) (local procurement)
Head vinyl chloride general purpose(VP-16) (local procurement)

● Model FDCVA302



(6) Electrical wiring

Electrical installation work must be performed by an electrical installation service provider qualified by a power provider of the country.

Electrical installation work must be executed according to the technical standards and other regulations applicable to electrical installations in the country.

① Do not use any supply cord lighter than one specified in parentheses for each type below.
- braided cord (code designation 60245 IEC 51),
- ordinary tough rubber sheathed cord (code designation 60245 IEC 53)
- flat twin tinsel cord (code designation 60227 IEC 41);

Do not use anything lighter than polychloroprene sheathed flexible cord (code designation 60245 IEC57) for supply cords of parts of appliances for outdoor use.

② Ground the unit. Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone grounding wire. If improperly grounded, an electric shock or malfunction may result.

③ A grounding wire must be connected before connecting the power cable. Provide a grounding wire longer than the power cable.

④ The installation of an impulse withstanding type earth leakage breaker is necessary. A failure to install an earth leakage breaker can result in an accident such as an electric shock or a fire.

⑤ Do not turn on the power until the electrical work is completed.

⑥ Do not use a running capacitor for power factor improvement under any circumstances. (It does not improve power factor, while it can cause an abnormal overheat accident)

⑦ For power supply cables, use conduits.

⑧ Do not lay electronic control cables (remote control and signaling wires) and other cables together outside the unit. Laying them together can result in the malfunctioning or a failure of the unit due to electric noises.

⑨ Fasten cables so that may not touch the piping etc.

⑩ When cables are connected, please make sure that all electrical components within the electrical component box are free of loose connector coupling or terminal connection and then attach the cover securely. (Improper cover attachment can result in malfunctioning or a failure of the unit, if water penetrates into the box.)

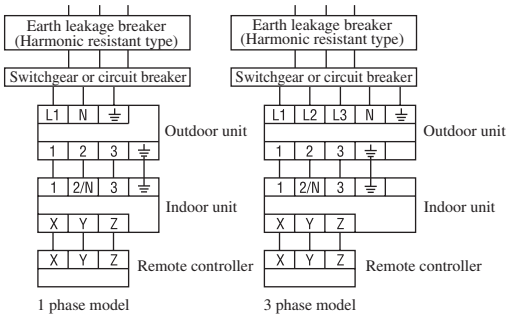
⑪ Always use a three-core cable for an indoor-outdoor connecting cable. Never use a shield cable.

Power cable, indoor-outdoor connecting wires

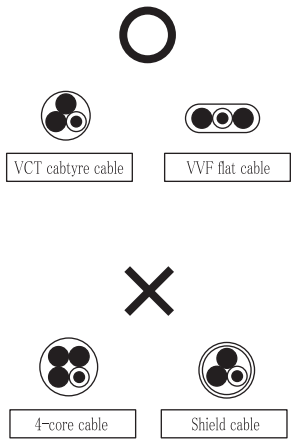
- Always perform grounding system installation work with the power cord unplugged.

⚠CAUTION

Always use an earth leakage circuit breaker designed for inverter circuits to prevent a faulty operation.



Model	Power source	Power cable thickness (mm^2)	Max. over current (A)	Cable length (m)	Grounding wire thickness	Indoor-outdoor wire thickness × number
FDCVA151	1 phase 220-240V 50Hz/ 220V 60Hz	2.0	15	19	ϕ1.6 mm	ϕ1.6 mm × 3
FDCVA201						
FDCVA251						
FDCVA302		3.5	16	20		
FDCVA402			17	20		
FDCVA502		5.5	22	25		
FDCVA602			23	24		
FDCVA402	3 phase 380-415V 50Hz/ 380V 60Hz	3.5	11	28	ϕ1.6 mm	
FDCVA502			12	25		
FDCVA602			13	23		
FDCVA802			17	20		
FDCVA1002		5.5	20	28		



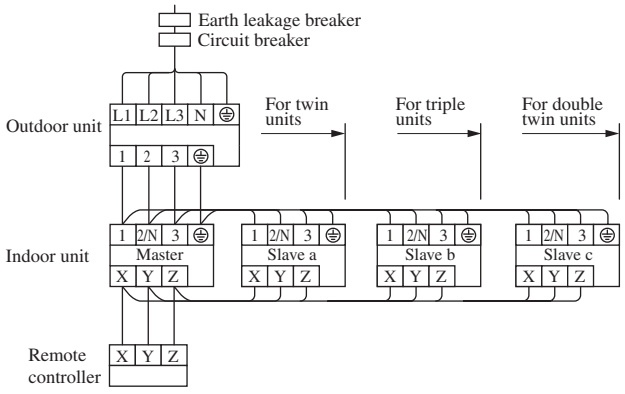
- At the connection with the duct type indoor unit.

Model	Power source	Power cable thickness (mm^2)	Max. over current (A)	Cable length (m)	Grounding wire thickness	Indoor-outdoor wire thickness × number
FDCVA402	1 phase 220-240V 50Hz/ 220V 60Hz	3.5	18	16	ϕ1.6 mm	ϕ1.6 mm×3
FDCVA502		5.5	26	18		
FDCVA602		8	28	26		
FDCVA402	3 phase 380-415V 50Hz/ 380V 60Hz	3.5	12	25		
FDCVA502			16	20		
FDCVA602			18	16		
FDCVA802		5.5	21	26		
FDCVA1002			25	22		

Notes (1) The specifications shown in the above table are for units without heaters. For units with heaters, refer to the installation instructions or the construction instructions of the indoor unit.
(2) Switchgear or circuit breaker capacity which is calculated from MAX. over current should be chosen along the regulations in each country.
(3) The cable specifications are based on the assumption that a metal or plastic conduit is used with no more than three cables contained in a conduit and a voltage drop is 2%. For an installation falling outside of these conditions, please follow the internal cabling regulations. Adapt it to the regulation in effect in each country.

(d) Wiring diagram

- This diagram shows wiring for a 3 phase model.



4) Between master and slave indoor units, connect between the same numbers ①, ②, ③ and Ⓧ, Ⓨ, Ⓩ on the respective terminal blocks.

5) Set the same address for the master and slave indoor units as the communications address for the remote controller using rotary switch SW2 on the indoor units' control PCB.

6) Set slave a, slave b and slave c using DIP switch SW5-1 and SW5-2 on the control PCB of the respective indoor slave units.

7) Be sure to press the AIR CON No. button on the remote controller after turning on the power, then check if the indoor master and slave unit No. is displayed in the remote controller.

   The indoor unit address is displayed when the AIR CON No. button is pressed. After that, pressing the ▲ or ▼ key displays the unit No. beginning from the lowest No.

8) Plural Master / Slave setting

   Set the plural address switches SW5-1 and SW5-2 on the indoor control PCB as shown in the table right.

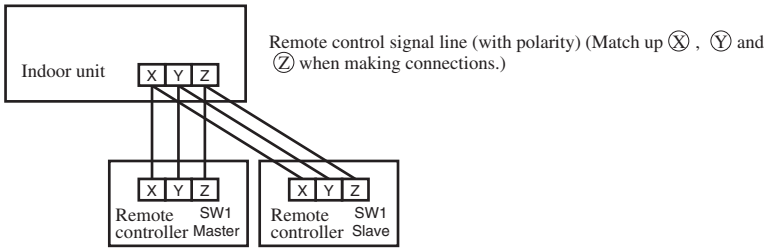
Master setting at time of factory shipment		Indoor unit			
		Master	Slave a	Slave b	Slave c
DIP switch	SW5-1	OFF	OFF	ON	ON
	SW5-2	OFF	ON	OFF	ON

(e) Remote controller wiring and connection procedure

1) Master-slave settings when using multiple remote controllers

- Up to 2 remote controllers can be connected for each indoor unit (or group).

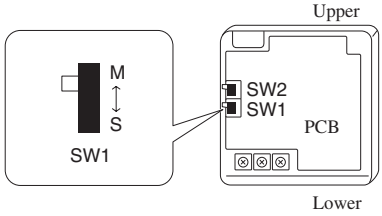
a) There are two methods, one where the remote controller signal line (3-wire) for the slave remote controller is taken from the indoor unit and the other where the signal lines are taken from the master remote controller.



b) Set the SW1 select switch on the slave remote controller on the Slave setting. (It is set on the Master setting at the factory.)

Note (1) Remote controller sensor activation settings are possible only with the master remote controller. Install the master remote controller in a location where it can sense the room temperature.

Switch		Function
SW1	M	Master remote controller
	S	Slave remote controller

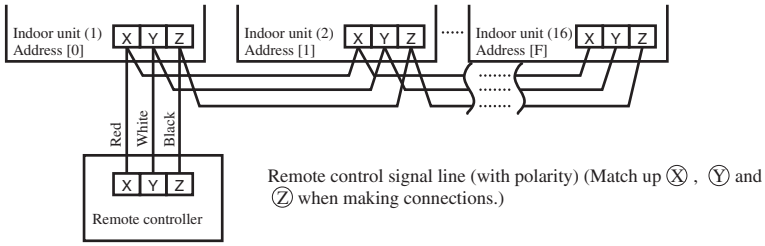


2) Controlling multiple indoor units using a single remote controller.

- Up to 16 indoor units can be controlled with a single remote controller.

a) Run 3-wire remote control lines between each of the indoor units. See "Precation in extending the remote controller cord" on page 213 concerning extended remote control lines.

b) Set the remote controller communications address on "0" ~ "F" using rotary switch SW2 on the indoor unit's control board, taking care not to overlap the addresses of any of the units.


Indoor unit (1) Address [0]
X Y Z
Indoor unit (2) Address [1]
X Y Z
Indoor unit (16) Address [F]
X Y Z
Red
White
Black
X Y Z
Remote controller
Remote control signal line (with polarity) (Match up Ⓧ , Ⓨ and Ⓩ when making connections.)

c) After turning the power on, press the AIR CON No. button to display the indoor unit's address. Be sure to confirm that the settings are displayed correctly in the remote controller by using the ▲ and ▼ buttons to display the address of each connected indoor unit.

(7) Setting functions using the wired remote controller

(a) The default settings of this unit's functions are as follows: If you want to charge a setting, follow the procedure found in the installation manual and set to your desired setting.

For the method of setting, please refer to the installation manual of a remote controller.

① Remote controller unit functions (FUNCTION ▼)

Function number Ⓐ	Function description Ⓑ	Setting Ⓒ	Default setting	
01	GRILLE ↑↓ SET (Grille lift panel setting)	↑↓ INVALID	○	
		50Hz AREA ONLY		
		60Hz AREA ONLY		
02	AUTO RUN SET	AUTO RUN ON	✻	← Automatic operation disabled
		AUTO RUN OFF		
03	TEMP S/W	VALID	○	
		INVALID		← TEMP button operation disabled
04	MODE S/W	VALID	○	
		INVALID		← MODE button operation disabled
05	ON/OFF S/W	VALID	○	
		INVALID		← ON/OFF button operation disabled
06	FANSPEED S/W	VALID	○	
		INVALID		← FAN SPEED button operation disabled
07	LOUVER S/W	VALID	✻	
		INVALID		← LOUVER button operation disabled
08	TIMER S/W	VALID	○	
		INVALID		← TIMER button operation disabled
09	SENSOR S/W (Remote control sensor setting)	SENSOR OFF (Invalid)	○	
		SENSOR ON (Valid)		
10	POWER FAILURE COMPENSATION SET	INVALID	○	
		VALID		← Interlocking with air conditioner operaition, the indoor unit output connector (CNT) outputs operation commands to start or stop other ventilation equipment.
11	VENTI SET	NO VENTI	○	
		VENTI LINK SET		← Upon operation of the VENT button, the indoor unit output connector (CNT) outputs operation com-mands to start or stop other ventilation equipment.
		NO VENTI LINK		
12	TEMP RANGE SET	DISP CHANGE	○	← When a temperature range setting is changed, the temperture range displayed on a remote control unit will also be changed.
		NO DISP CHANGE		← When a temperature range setting is changed, the temperature range displayed on a remote control unit will not be changed.
13	I/U FAN SPEED (Indoor unit fan speed setting)	3 FAN SPEED	✻	← An indoor unit fan speed can be selected from "Hi", "Me" and "Lo".
		2 FAN SPEED		← An indoor unit fan speed can be set to either "Hi" or "Lo".
		1 FAN SPEED		← The FAN SPEED button will be disabled.
14	MODEL TYPE	HEAT PUMP	✻	
		COOLING ONLY		
15	EXTERNAL CONTROL SET	INDIVIDUAL OPERATION	○	← When an indoor unit input connector (CNT) receives an external signal input, that particular indoor unit alone will start an external input operation.
		SAME OPERATION FOR ALL UNITS		← When an indoor unit input connector (CNT) receives an external signal input, the entire indoor unit group will start an external input operation.
16	ERROR DISP SET	ERROR DISP	○	
		NO ERROR DISP		
17	POSITION (Louver control setting)	FIX (1 OF 4) (4 position stop)	○	← Pressing the LOUVER button during a louver operation will cause 4 Position Indication to be displayed.
		IN MOTION (Free stop)		← Pressing the LOUVER button during a louver operation will not cause 4 Position Indication to be displayed.
18	˚C/˚F SET	˚C	○	
		˚F		

Notes(1) Setting marked with [O] are the default setting.
(2) Setting marked with [∗] are those that are set automatically according to an indoor unit or an outdoor unit connected. Please check default settings with the indoor unit's installation manual.
(3) When Item 17 : " POSITION" is changed, please also change Item 04 " POSITION" setting found in ÒIndoor unit functionsÓ.

② Indoor unit functions (I/U FUNCTION ▲)

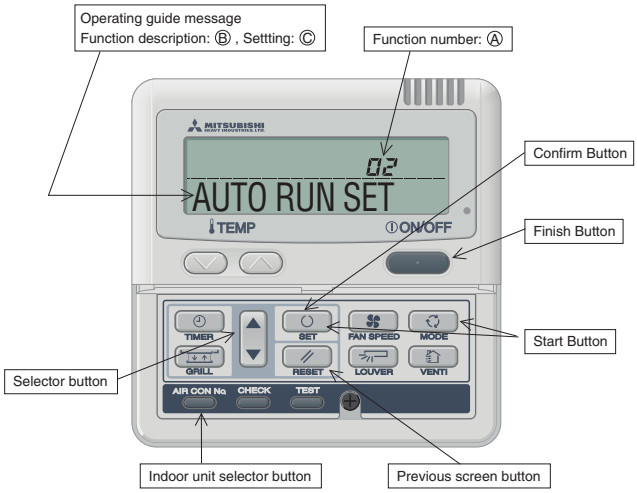
Function number Ⓐ	Function description Ⓑ	Setting Ⓒ	Default setting
01	Hi CEILING SET	STANDARD (Mild mode)	✻
		Hi CEILING 1 (Powerful mode)	
03	FILTER SIGN SET	NO DISPLAY	✻
		AFTER 180H	
		AFTER 600H	
		AFTER 1000H	
		1000H→STOP	
04	POSITION (Louver control setting)	FIX (1 OF 4) (4 positiion stop)	○
		IN MOTION (Free stop)	
05	EXTERNAL INPUT SET	LEVEL INPUT	○
		PULSE INPUT	
06	OPERATION PERMISSION PROHIBITED	NORMAL OPERATION	○
		VALID	
07	ROOM TEMP OFFSET (Heating room temperature offset)	NORMAL OPERATION	○
		TEMP SHIFT +3˚C	
08	FAN CONTROL (Heating fan control)	LOW FAN	✻
		STOP→LOW FAN (Intermittent operation)	
09	FREEZE PREVENT TEMP	TEMP Hi	
		TEMP Lo	○
10	FREEZE PREVENT CONTROL	FAN CONTROL ON	○
		FAN CONTROL OFF	

Notes(1) Setting marked with [O] are the default setting.
(2) Setting marked with [∗] are those that are set automatically according to an indoor unit or an outdoor unit connected.
Please check default settings with the indoor unit's installation manual.

(b) Function setting method

1) Stop the air conditioner
2) Press the SET and MODE buttons simultaneously for 3 seconds or longer.
   The screen display will be switched as follows:
   "SELECT ITEM" →
   "SET" →
   "FUNCTION SET ▼"

3) Press the SET button.
   The unit will enter the function setting mode. The screen display will charge to " FUNCTION ▼".



4) Check which category your desired setting belongs to, " FUNCTION ▼ (Remote controller unit function)" or "I/U FUNCTION ▲" (Indoor unit function).
5) Press either ▲ or ▼ button.
   Select either " FUNCTION ▼ " or "I/U FUNCTION ▲".

6) Press the SET button.
7) When " FUNCTION▼ " is selected.

① "DATA LOADING" (blinking) → "FUNCTION"→
"GRILLE ↑↓ SET" (Function number: Ⓐ, Function description: Ⓑ)
The screen display will be switched like this.

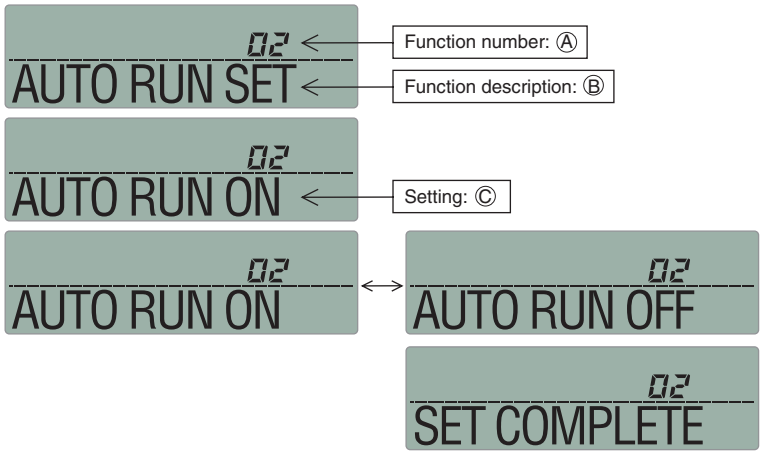
② Press either ▲ or ▼ button.
"Function number: Ⓐ, Function description: Ⓑ "from the list of remote controller unit functions will be displayed one by one. Select a desired function.

③ Press the SET button.
The screen display will be switched as follows:
"SETTING" → "Setting: Ⓒ" (ex. "AUTO RUN ON")

④ Press either ▲ or ▼ button.
A list of "Settings: Ⓒ" will be displayed one by one. Select your desired setting.

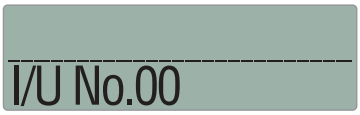
⑤ Press the SET button.
The selected setting is displayed for 2 seconds, then followed by "SET COMPLETE" and the function setting process is completed.
Then the screen display will be swiched to "Function number: Ⓐ, Function description: Ⓑ," so if you want to continue to set another function, repeat the steps as explained above.
To finish the function setting process, please proceed to Step 8).

* When "02 AUTO RUN SET " is selected.



When "I/U FUNCTION ▲" is selected.

① The screen display will be switched as follows:
"◆☝ I/U SELECT" → "○☝ SET"→ "I/U No.00" (blinking)



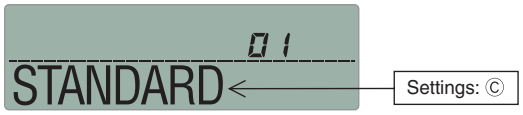
② Press either ▲ or ▼ button.
Select the indoor unit number that you want to change settings. If only one indoor unit is connected, the indoor unit number will not charge, so please proceed to Step ③.
If "ALL I/U ▼ " is selected while indoor group control is in effect, you can set all units to the same settings.

③ Press the SET button.
Indoor unit number indication will change from blinking to lit continuously, The screen display will be switched as follows:
"DATA LOADING" (blinking for about 2 to 23 seconds) → "◆☝ FUNCTION"→ "Hi CEILING SET"
(Function number: Ⓐ, Function description: Ⓑ)

* When "01 Hi CEILING SET" is selected.

④ Press either ▲ or ▼ button.
"Function number: Ⓐ, Function description: Ⓑ" from the list of indoor unit functions will be displayed one by one. Select a desired function.

⑤ Press the SET button.
The screen display will be switched as follows: "◆☝ SETTING" → "Setting: Ⓒ" (ex. "STANDARD")



⑥ Press either ▲ or ▼ button.
A list "Setting: Ⓒ" will be displayed one by one. Select your desired setting.

⑦ Press the SET button.
The selected setting is displayed for 2 seconds, then followed by "SET COMPLETE" and the function setting process is completed.
Then the screen display will be switched to "Function number: Ⓐ, Function description: Ⓑ" so if you want to continue to set another function, repeat the stepa as explained above. To finish the function setting process, please proceed to Step 8).

⑧ Press AIR CON No. button.
The screen display will go back to the indoor unit selection screen (ex. " I/U No.00").
If you want to continue to set another indoor unit, please follow the steps explained above.

8) Press the ON/OFF button.
This ends a function setting process. Even if a function setting process is not completed, this ends the process.
Please note that any setting that is not completed will become void.

- **Pressing the RESET button during a function setting process will allow you to go back the previous step. Please note that any setting that is not completed will become void.**
- **Method of checking the current setting**
  While following the above mentioned step, the setting that appears when the SET button is pressed for each "Function number: Ⓐ, Function description: Ⓑ" is the current setting "Stting: Ⓒ". (When "ALL I/U ▼" is selected, the setting of the indoor unit with the lowest number is displayed)
- **Settings are stored in the controller and not lost when a power outage occurs.**

(c) Changing the remote control set temperature range

1) It is possible to change the set temperature range using the remote control.
   a) The upper and lower set temperature limits can be set from the remote control.
      Upper limit value setting: Effective during heating. The temperature can be set within a range of 20~30ºC.
      Lower limit value setting: Effective when running in modes other than the heating mode (AUTO, COOL, FAN, DRY): The temperature can be set within a range of 18~26ºC.
   b) If the upper and lower limits are set using this function, the following controls are active.
2) When and ⑫TEMP RANGE SET under "FUNCTION" the function setting mode is DISP CHANGE
   a) If you are setting the upper limit,
      ① If a temperature that is greater than the upper limit during heating is set from the remote control.
      The unit runs for 30 minutes at the set temperature, then it automatically transmits the upper limit temperature. The display on the remote control also approaches that temperature.
      ② During heating, if the upper limit value is set at a temperature below the upper limit value:
      The set temperature is transmitted.
   b) If the lower limit is set
      ① If a temperature that is lower than the lower limit value is set from the remote control. When running in an operation mode other than the heating mode: the unit runs at the set temperature for 30 minutes, then it automatically transmits the lower limit temperature.
      ② If a temperature that is higher than the lower limit value is set when running in a mode other than the heating mode:
      It transmits the set temperature.
3) When and ⑫TEMP RANGE SET under the "FUNCTION" the function setting mode is NO DISP CHANGE.
   a) If the upper limit is set
      ① During heating, if a temperature that is higher than the upper limit is set from the remote control:
      The upper limit value is transmitted. However, the remote control display does not approach the upper limit value, but remains on the set temperature.
      ② During heating, if the temperature is set at a value lower than the upper limit value:
      The set temperature is transmitted.
   b) If the lower limit is set
      ① When in an operating mode other than the heating mode, if a temperature that is lower than the lower limit value is set from the remote control:
      The lower limit value is transmitted. However, the remote control display does not approach the lower limit value, but remains on the set temperature.
      ② When in an operating mode other than the heating mode, if a temperature that is higher than the lower limit value is set:
      The set temperature is transmitted.
4) Setting the upper and lower limit values
   a) Stop the air conditioner, then press the SET and MODE buttons simultaneously for 3 seconds or longer. If you press "SELECT ITEM" → "SET" → "FUNCTION SET ▼" the display changes.
   b) Press the ▼ button, then change the "TEMP RANGE ▲" display.
   c) Press the SET button and enter the temperature range setting mode.
   d) Using the ▲ ▼ buttons, select the "Hi LIMIT SET ▼" or "Lo LIMIT SET ▲," then fix it by pressing SET.
   e) If you selected "Hi LIMIT SET," (enabled during heating)
      ① "SET UP" → "Hi LIMIT 28°C" (blinking) is displayed.
      ② Using the "" temperature setting buttons, select the upper limit value. Display Example: "Hi LIMIT 26ºC " (blinking)
      ③ Press the SET button to fix the setting. Display example: "Hi LIMIT 26°C" (lights up for 2 seconds)
      After the fixed upper limit value lights up for 2 seconds, the display returns to the "Hi LIMIT SET ▼" display in item d).
   f) If "Lo LIMIT SET ▲" was selected (enabled during COOL, DRY and FAN)
      ① "SET UP" → "Lo LIMIT 20°C " (blinking) is displayed.
      ② Using the temperature setting buttons, select the lower limit. Display example: "Lo LIMIT 24ºC " (blinking)
      ③ Press the SET button to fix the setting. Display example: "Lo LIMIT 24°C" (lights up for 2 seconds)
      After the fixed lower limit value lights up for 2 seconds, the display returns to the "Lo LIMIT SET ▲" display in item d).
   g) Pressing the ON/OFF button stops the operation.
      (Operation stops even if the ON/OFF button is pressed during setting, and the stopped state returns. However, if setting is not completed, it is not valid, so use caution.)

◆ If the RESET button is pressed during setting, the previous setting screen is displayed.

- If the RESET button is pressed during a setting operation, the display returns to the previously displayed setting screen. However, settings which have not been fixed become invalid, so exercise caution.
  * If "NO DISP CHANGE" is selected in No. 12, "TEMP RANGE SET" of the remote controller's functions, of the function setting modes, the remote controller's display does not change even if the temperature range has been changed.

(Example) If the upper limit is set at 28 ˚C

Function No. A	Function Contents B	Setting Contents ˚C	Control Contents
12	TEMP RANGE SET	DISP CHANGE	The remote controller's display and sent data upper limit changes to 28 ˚C.
		NO DISP CHANGE	The remote controller's display upper limit remains at 30 ˚C and only the upper limit of the sent data is changed to 28 ˚C.

(8) Checking operation data

Operation data can be checked with remote controller unit operation.

① Press the CHECK button.
The display change from " ◆ SELECT ITEM" → "○ SET" → "OPERATION DATA ▼ ".

② Press the SET button while "OPERATION DATA ▼ " is displayed.

③ The display will change to "I/U No. 00 ▲ " (blinking indication).
Select the indoor unit number you want to have data displayed with the ▲ ▼ button.
(When only one indoor unit connected, the indoor unit number displayed on the screen will not change.)

④ Determine the indoor unit number with the SET button.
(The indoor unit number changes from blinking indication to continuous indication.)
"DATA LOADING" (A blinking indication appears while data is loaded)
↓
"OPERATION DATA ◆ " appears and data number 01 is displayed.

⑤ Upon operation of the ▲ ▼ button, the current operation data is displayed in order from Data number 01.
The items displayed are as follows:
* Depending on models, the items that do not have corresponding data are not displayed.

⑥ To display the data of a different indoor unit, press the AIR CON No. button, which allows you to go back to the indoor unit selection screen.

⑦ Pressing the ON/OFF button will stop displaying data.

Pressing the RESET button during remote controller unit operation will undo your last operation and allow you to go back to the previous screen.

Number	Data item	
01	※	(Operation mode)
02	SET TEMP	
03	RETURN AIR	
04	I/U HEAT EXCH 1	(Indoor unit heat exchanger temperature 1)
05	I/U HEAT EXCH 2	(Indoor unit heat exchanger temperature 2)
07	I/U FAN	(Indoor unit fan speed)
11	TOTAL I/U RAN	(Indoor unit operation hours)
21	OUTDOOR	(Outside air temperature)
22	O/U HEAT EXCH 1	(Outdoor unit heat exchanger temperature 1)
23	O/U HEAT EXCH 2	(Outdoor unit heat exchanger temperature 2)
24	COMP HERTZ	
27	DISCHARGE	(Discharge pipe temperature)
28	DOME BOTTOM	
29	CT	
31	O/U FAN	(Outdoor unit fan speed)
32	SILENT MODE ON/OFF	
34	63H1 ON/OFF	
35	DEFROST ON/OFF	
36	TOTAL COMP RUN	(Compressor operation hours)
37	EEV 1	(Expansion valve opening 1)

(9) Test run

(a) Test run from an outdoor unit.

● Models FDCVA151~251

1) Test run method

a) A test run can be initiated from an outdoor unit by using SW9 and SW5-4 for on-site setting.

b) When SW9 (press button switch) is pressed for 1 second and then released, the compressor will start operation approximately 5 seconds later.

c) The unit will start a cooling operation, when SW5-4 is OFF, or a heating operation, when SW5-4 is ON.

d) When a test run is completed, press SW9 (push-button switch) again for one second and then release it.

e) Only red LED is lit on the unit. Normally it keeps on blinking, or it is lit continuously during a test run.

2) Checking the state of the unit in operation

Check discharge pressure and suction pressure, using the check joint provided inside the unit on the pipe connecting between the four-way valve and the heat exchanger and the gas service valve charge port. As summarized in the table below, different pressure measurements are obtained at these points depending on a cooling or heating operation.

	Check joint in the unit	Gas service valve charge port
Cooling	Discharge pressure (high pressure)	Suction pressure (low pressure)
Heating	Suction pressure (low pressure)	Discharge pressure (high pressure)

3) Setting SW5-1, SW5-2 on-site

a) Defrost control switching (SW5-1)

① When this switch is turned on, the unit will run in the defrost mode more frequentiy.

② Please set this switch to ON, when installed in a region where outdoor temperaure falls below zero during the thermistor the unit is run for a heating operation.

b) Snow guard fan control (SW5-2)

① When this switch is turned on, the outdoor unit fan will run for 10 seconds in every 10 minutes, when outdoor temperature falls to 3˚C or lower and the compressor is not running.

② When the unit is used in a very snowy country, please set this switch to ON.

● Models FDCVA302 ~ 1002

⚠WARNING

- Before conduct a test run, do not fail to make sure that the service valves are not closed.
- Turn on power 6 hours prior to a test run to energize the crank case heater.
- In case of the first operation after turning on power, even if the unit does not move for 30 minutes, it is not a breakdown.
- Always give a 3-minute or longer interval before you start the unit again whenever it is stopped.

} A failure to observe these instructions can result in a compressor breakdown.

- Removing the service panel will expose high-voltage live parts and high-temperature parts, which are quite dangerous. Take utmost care not to incur an electric shock or burns. Do not leave the unit with the service panel open.

⚠CAUTION

- When you operate switches (SW3, SW5) for on-site setting, be careful not to touch a live part.
- You cannot check discharge pressure from the liquid service valve charge port.
- The 4-way valve (20S) is energized during a heating operation.
- When power supply is cut off to reset the unit, give 3 or more minutes before you turn on power again after power is cut off. If this procedure is not observed in turning on power again, " Communication error between outdoor and indoor unit " may occur.

1) Test run method

a) A test run can be initiated from an outdoor unit by using SW3-3 (SW5-3) and SW3-4 (SW5-4) for on-site setting.
b) Switching SW3-3 (SW5-3) to ON will start the compressor.
c) The unit will start a cooling operation, when SW3-4 (SW5-4) is OFF, or a heating operation, when SW3-4 (SW5-4) in ON.
d) Do not fail to switch SW3-3 (SW5-3) to OFF when a test run is completed.

SW3-3 (SW5-3)	SW3-4 (SW5-4)	
ON	OFF	Cooling during a test run
	ON	Heating during a test run
OFF	—	Normal or After the test operation

Note (1) Values in ( ) show in the case of the 302 model.

2) thecking the state of the unit in operation

Use check joints provided on the piping before and after the 4-way valve installed inside the outdoor unit for checking discharge pressure and suction pressure.

As indicated in the table shown on the right, pressure detected at each point will vary depending on whether a cooling or heating operation has been selected.

	Check joint of the pipe	Charge port of the gas service valve
Cooling operation	Discharge pressure (High pressure)	Suction pressure (Low pressure)
Heating operation	Suction pressure (Low pressure)	Discharge pressure (High pressure)

3) Setting SW3-1, SW3-2 on site or open J7 (SW7-1)

a) Defrost control switching [SW3-1]
① When this switch is turned ON, the unit will run in the defrost mode more frequency.
② Set this switch to ON, when installed in a region where outdoor temperature falls below zero during the season the unit is run for a heating operation.

b) Snow guard fan control [SW3-2]
① When this switch is turned on, the outdoor unit fan will run for 10 seconds in every 10 minutes, when outdoor temperature falls to 3°C or lower and the compressor is not running.
② When the unit is used in a very snowy country, set this switch to ON.

c) High pressure control [J7 (SW7-1)]
• When the option parts that change air flow from outlet are used, cut (open) J7.
Cut the jumper wire into two parts and ensure that they are kept isolated from each other.

4) Failure diagnosis in a test run

Error indicated on the remote control unit	Printed circuit board LED (They cycles of 5 seconds)		Failure event	Action
	RED LED	GREEN LED		
E39	1 time flash	Keeps flashing	Open phase	Check power cables for loose contact or disconnection
E40	1 time flash	Keeps flashing	63H1 actuation or operation with service valve shut (occurs mainly during a heating operation)	1. Check whether the service valves are open. 2. If an error has been canceled when 3 minutes have elapsed since a compressor stop, you can restart the unit by effecting check result from the remote control unit.
E49	1 time flash	Keeps flashing	Low pressure error or operation with service valves shut (occurs mainly during a cooling operation)	

5) The state of the electronic expansion valve.

The following table illustrates the steady states of the electronic expansion valve.

	When power is turned on	When the unit comes to a normal stop		When the unit comes to an anomalous stop	
		During a cooling operation	During a heating operation	During a cooling operation	During a heating operation
Valve for a cooling operation	Complete shut position	Complete shut position	Full open position	Full open position	Full open position
Valve for a heating operation	Full open position	Full open position	Complete shut position	Full open position	Full open position

(b) Test run from an wired remote controller.

1) Cooling test operation procedure

Operate the remote control unit as follows.

a) Starting the cooling test operation

① Start the system by pressing the ON/OFF button.

② Select "✳ (COOL)" with the MODE button.

③ Press the TEST button for 3 seconds or longer.

The screen display will be switched as follows " ◆◆ SELECT ITEM" → "○ SET" → " ✳ TEST RUN ▼ ".

④ When the SET button is pressed while " ✳ TEST RUN ▼ " is indicated, a cooling test run will start.

The screen display will pressed to " ✳ TEST RUN."

b) Ending a cooling test run

Pressing the ON/OFF button or the TEMP ∧ button will end a cooling test run.

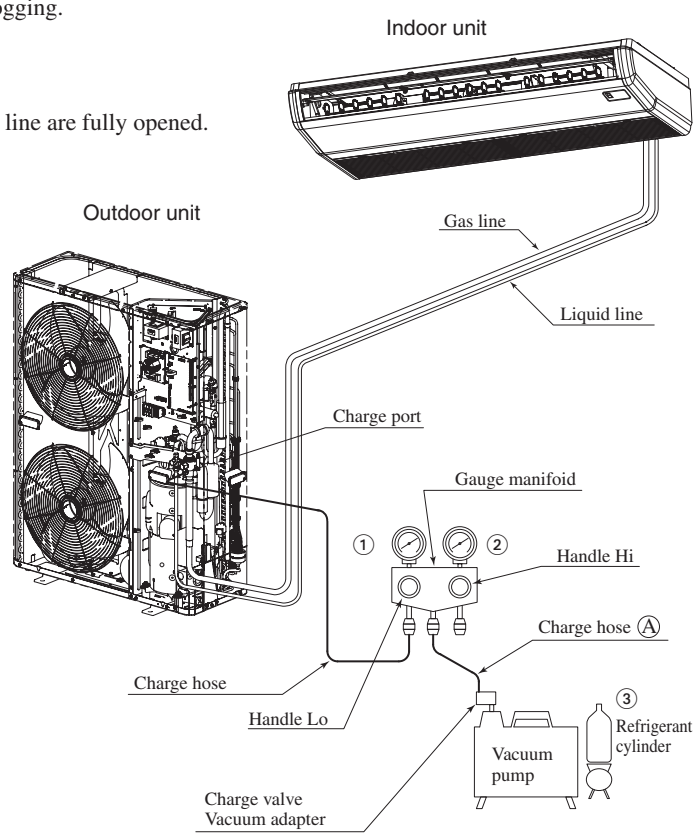
" ✳ TEST RUN" shown on the screen will go off.

1.6 MAINTENANCE DATA

1.6.1 Servicing

(1) Evacuation

The evacuation is a procedure to purge impurities, such as noncondensable gas, air, moisture from the refrigerant equipment by using a vacuum pump. Since the refrigerant R410A is very insoluble in water, even a small amount of moisture left in the refrigerant equipment will freeze, causing what is called ice clogging.



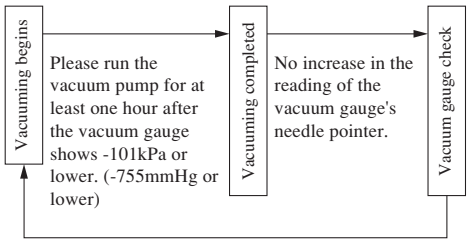
Evacuation procedure

Make sure that the both service valves of gas and liquid line are fully opened.

(a) Check to ensure that there is no internal pressure in the unit. If there is an internal pressure, it should be relieved through the service port.

(b) Connect the charging hose of the gauge manifold to the service port of the gas piping.
Close high pressure valve ② of gauge manifold.

(c) Connect the charging hose Ⓐ to a vacuum pump.
Repeat evacuation in the following sequence.


Vacuuming begins
Please run the vacuum pump for at least one hour after the vacuum gauge shows -101kPa or lower. (-755mmHg or lower)
Vacuuming completed
No increase in the reading of the vacuum gauge's needle pointer.
Vacuum gauge check

When the vacuum gauge's needle pointer creeps up, there is moisture left in the system or a leak. Pull air again after you have checked the system for a leak and rectified it. Use a reverse flow stop adapter to prevent the vacuum pump's lubricant oil from flowing into the refrigerant system.

Notes (1) Do not use the refrigerant pressure to expel air.
(2) Do not use the compressor for evacuation.
(3) Do not operate the compressor in a vacuum condition.

(2) Refrigerant charging

(a) After the evacuation shown in the above, change the connection of the charge hose Ⓐ to the refrigerant cylinder.

(b) Purge air from the charge hose Ⓐ.

First loosen the connecting portion of the charge hose at the gauge manifold side and open valve ③ for a few seconds, and then immediately retighten it after observing that gas has blown out from loosened connecting portion.

(c) Open valves ① and ③ then gas refrigerant begins flowing from the cylinder into the unit.

When refrigerant has been charged into the unit to some extent, refrigerant flow becomes stagnant. When that happens, start the compressor in cooling cycle until the system is filled with the specified amount of gas, then close valves ① and ③ and remove the gauge manifold. Cover the service port with caps and tighten them securely.

(d) Check for gas leakage by applying a gas leak detector around the piping connection.

(e) Start the air conditioner and make sure of its operating condition.

1.6.2 Trouble shooting for refrigerant circuit

(1) Judgement of operating condition by operation pressure and temperature difference

Making an accurate judgement requires a skill that is acquired only after years of experience, one trouble may lead to an another trouble from a single trouble source and several other troubles may exist at the same time which comes from a undetected different trouble source.

Filtering out the trouble sources can be done easier by comparing with daily operating conditions. Some good guides are to judge the operating pressure and the temperature difference between suction air and delivery air.

Following are some pointers,

Pressure: Indication / Circuit	Too low	A little low	Normal	A little high	Too high	Trouble cause
High side Low side					● ●	1) Excessive overcharging of refrigerant 2) Mixture of non condensable gas (air etc.)
High side Low side	● 	 	 	 	 ●	Ineffective compression (defective compressor)
High side Low side	 ●	● 	 	 	 	1) Insufficient refrigerant in circuit 2) Clogging of strainer 3) Gas leakage 4) Clogging of air filter (in cooling) 5) Decrease in heat load (in cooling) 6) Locking of indoor fan (in cooling)
High side Low side	 	 	 	 ●	● 	1) Locking of outdoor unit fan (in cooling) 2) Dirty outdoor heat exchanger (in cooling) 3) Mixture of non condensable gas (air etc.)
High side Low side	 	 	 	● 	 ●	1) Too high temperature of room

(1) Selfdiagnosis function

(a) Check Indicator Table

Whether a failure exists or not on the indoor unit and outdoor unit can be known by the contents of the error code on the remote controller, indoor/outdoor unit green LED (power pilot lamp and microcomputer normality pilot lamp) and red LED (check pilot lamp).

1) Indoor unit side

Remote controller error code	Indoor unit LED		Outdoor unit LED		Cause
	Green	Red	Green	Red	
No-indication	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Normal
	Stays OFF	Stays OFF	Stays OFF	Stays OFF	Power OFF, L phase wiring is open, power source failure
	Keeps flashing	*3 time flash	Keeps flashing	Stays OFF	Remote controller wires X and Y are connected in reverse. *For wire breaking at power ON, LED is OFF. Remote controller wire is open. (X wire breaking : A beep is produced and no indication is made. Z wire breaking : No beep and no indication) The remote controller wires Y and Z are connected in reverse.
LCD flashes continuously or is off.	Keeps flashing	Stays OFF	Keeps flashing	2 time flash	Loose connection or disconnection in wires connecting the indoor and outdoor units.
E1	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	When multiple remote controllers are used for control, the power supply to some indoor units is OFF.
	Stays OFF or Lights continuously	Stays OFF	Keeps flashing	Stays OFF	Indoor unit PCB fault
E5	Keeps flashing	2 time flash	Keeps flashing	2 time flash	Indoor / outdoor transmission error.
	Keeps flashing	2 time flash	Stays OFF	Stays OFF	Outdoor unit control PCB is faulty when the power is turned on, or the inverter parts are faulty.
	Keeps flashing	2 time flash	Keeps flashing	Stays OFF	Outdoor unit microcomputer failure
E6	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	Indoor unit heat exchanger thermistor failure
E7	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	Indoor unit return air thermistor failure
E8	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	Heating overload (indoor heat exchanger temperature is anomaly high) and/or indoor heat exchanger thermistor is faulty.
E9	Keeps flashing	1 time flash	Keeps flashing	Stays OFF	The float SW operates (with FS only). Drain up kit wiring fault.
E10	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	The number of indoor units which is connected to a remote controller exceeds the limitation (16 units at maximum).
E14	Keeps flashing	3 time flash	Keeps flashing	Stays OFF	Communications are faulty between master and slave indoor units
E16	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Fan motor is faulty (FDTA 501, 601 type, FDKN type, FDTC type).
E28	Keeps flashing	Stays OFF	Keeps flashing	Stays OFF	Remote controller thermistor failure

2) Outdoor unit side

Remote controller error code	Indoor unit LED		Outdoor unit LED		Cause
	Green	Red	Green	Red	
E33	Keeps flashing	Stays OFF		1 time flash	Inverter primary side current is anomalous (FDCVA151~251)
E34	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Outdoor unit power supply open phase, Noise filter defect (FDCVA302~1002)
E35	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Outdoor heat exchanger temperature is high or outdoor heat exchanger thermistor is faulty.
E36	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Discharge temperature anomaly.
E37	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Outdoor unit heat exchanger thermistor failure
E38	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Ambient air temperature thermistor failure
E39	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Discharge pipe thermistor failure
E40	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	63H1 operation, Operation with service valve closed (FDCVA302~1002)
E41	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Power transistor overheat (FDCVA402~1002)
E42	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Current (Anomaly in a compressor over current), Operation with service valve closed
E45	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Inverter communications error (FDCVA302~1002)
E47	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Inverter over-voltage trouble (FDCVA151~251) Inverter A/F module overcurrent trouble (FDCVA302)
E48	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	DC fan motor anomalous.
E49	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Low pressure anomalous or low pressure sensor disconnected (FDCVA302~1002)
E51	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Inverter PCB anomalous (FDCVA302~1002)
E53	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Suction pipe temperature thermistor disconnected (FDCVA302~1002)
E54	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Low pressure sensor disconnected or anomalous (FDCVA302~1002)
E55	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Compressor under-dome temperature thermistor disconnected (FDCVA802,1002)
E56	Keeps flashing	Stays OFF		1 time flash	Power transistor thermistor is faulty or disconnection or connector connections are poor (FDCVA151~251)
E57	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Insufficient refrigerant (FDCVA151~251, 402~1002)
E59	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Compressor startup error (FDCVA151~251)
				2 time flash	
				3 time flash	
				5 time flash	Compressor startup error (FDCVA302~1002)
E60	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Compressor rotor position detection error (FDCVA151~251)

Note (1) The green LED in the outdoor unit is used in the FDCVA302~1002 models.

(b) Display sequence of error, inspection display lamp

1) In case an error occurs
   Display corresponding to the error is shown.
2) In case several errors occur

Section	Display section
Error code of remote controller	• Displays the error of higher priority (When plural errors are persisting) E1> E5> ..... E10 > E32 ..... E60 • Displays the present errors. (When a new error has occurred after the former error was reset.)
Inspection LED (red) of indoor unit PCB	
Inspection LED (red) of outdoor unit PCB	

3) Timing of error detection

● Indoor unit side.

Error detail	Error code	Timing of error detection
Drain error (float switch motion)	E9	When the floating switch is activated for more than 3 seconds continuously 30 seconds after the power is turned ON.
Wrong connection between the indoor and outdoor units.	"WAIT"	When the communication between the indoor unit and the outdoor unit is never done.
Transmission error of remote controller and indoor unit	E1	When the communication between the indoor unit and the remote controller is interrupted for 2 minutes after it tries to communicate once or more times after the power is supplied.
Transmission error between indoor/outdoor units	E5	When the communication between the indoor unit and the outdoor unit is interrupted for 2 minutes after it tries to communicate once or more times after the power is supplied.
The number of connected indoor units exceeds the connection limit (when multiple units are control led by a single remote controller).	E10	When it is detected at any time after the power is supplied.
Broken wire of indoor unit return air thermistor	E7	When an input temperature of –50 ˚C or lower is measured by the return air thermistor for 5 seconds or longer within 60 minutes after the first detection.
Broken wire of heat exchanger thermistor	E6	When an input temperature of –50 ˚C or lower is measured by the heat exchanger thermistor for 5 seconds or longer within 60 minutes after the first detection.

● Outdoor unit side.

Error detail	Error code	Timing of error detection
Broken wire of ambient air temperature thermistor	E38	When a thermistor input temperature of –30 ˚C or lower is measured for 5 seconds or longer 3 times within 40 minutes after the 1st detection in done between 2 minutes and 2 minutes 20 seconds after compressor operation starts.
Broken wire of heat exchanger thermister	E37	When a thermistor input temperature of –50 ˚C or lower is measured for 5 seconds or longer 3 times within 40 minutes after the 1st detection in done between 2 minutes and 2 minutes 20 seconds after compressor operation starts.
Broken wire of discharge pipe thermistor	E39	When a thermistor input temperature of –10 ˚C or lower is measured for 5 seconds or longer 3 times within 40 minutes after the 1st detection in done between 10 minutes and 10 minutes 20 seconds after compressor operation starts.
Broken wire of suction pipe thermistor	E53	When a thermistor input temperature of –50 ˚C or lower is measured for 5 seconds or longer 3 times within 40 minutes after the 1st detection in done between 10 minutes and 10 minutes 20 seconds after compressor operation starts.
Broken wire of low pressure sensor	E54	When a sensor is OV or lower or 3.49V or higher continously for 5 seconds or longer 3 times within 40 minutes after the 1st detection in done between 2 minutes and 2 minutes 20 seconds after compressor operation starts.
Broken wire of under the under-dome thermistor	E55	When the under-dome thermistor input temperature of –50 ˚C is measured for 5 seconds or longer 3 times within 40 minutes after the 1st detection in done between 10 minutes and 10 minutes 20 seconds after compressor operation starts.

4) Recording and reset of error

Error display	Memory	Reset
Error code of remote controller	• Saves the error code (1) with higher priority in memory	• Stop the unit operation by pressing the ON/OFF button of remote controller. • Operation can be started again if the error has been restored.
Indoor unit inspection lamp (red)	• Cannot save in memory	
Outdoor unit inspection lamp (red)	• Saves the error code (1) with higher priority in memory	

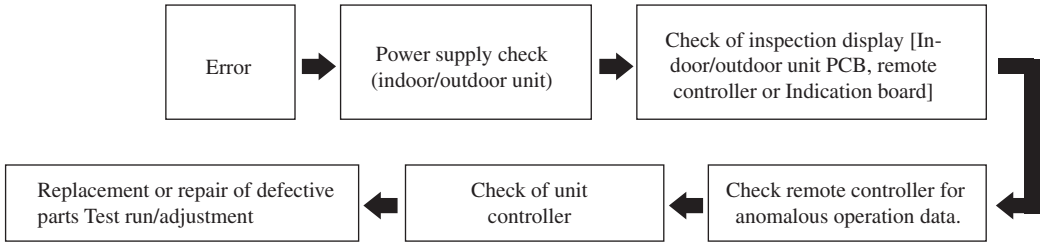
Notes (1) Priority is in the order of E1 > ... > E10 > ... > E60.

Indoor unit : Press the ON/OFF button on the remote controller. Or disconnect and reconnect the power supply connector (CNW1 or CNW0) on the indoor unit control PCB or turn the main power supply OFF.

Outdoor unit : Turn the main power supply OFF.

(2) Procedures of trouble diagnosis

When any error occurs, inspect in following sequence. Detailed explanation on each step is given later in this text.


Error
Power supply check (indoor/outdoor unit)
Check of inspection display [Indoor/outdoor unit PCB, remote controller or Indication board]
Check remote controller for anomalous operation data.
Check of unit controller
Replacement or repair of defective parts Test run/adjustment

(3) Error diagnosis procedures at the indoor unit side

To diagnose the error, measure the voltage (AC, DC), resistance, etc. at each connector around the PCB of indoor unit based on the inspection display or the operation state of unit (no operation of compressor or blower, no switching of 4-way valve, etc.) If any defective parts are discoverd, replace with the assembly of parts as shown below.

(a) Single-unit replacement parts for PCB of indoor unit. (Peripheral electric parts for circuit board.)

Indoor unit printed circuit board, thermistor (air return, heat exchanger), operating switches, limit switches, transformers, fuses.

Note (1) Use normal inspection methods to determine the condition of strong electrical circuits and frozen cycle parts.

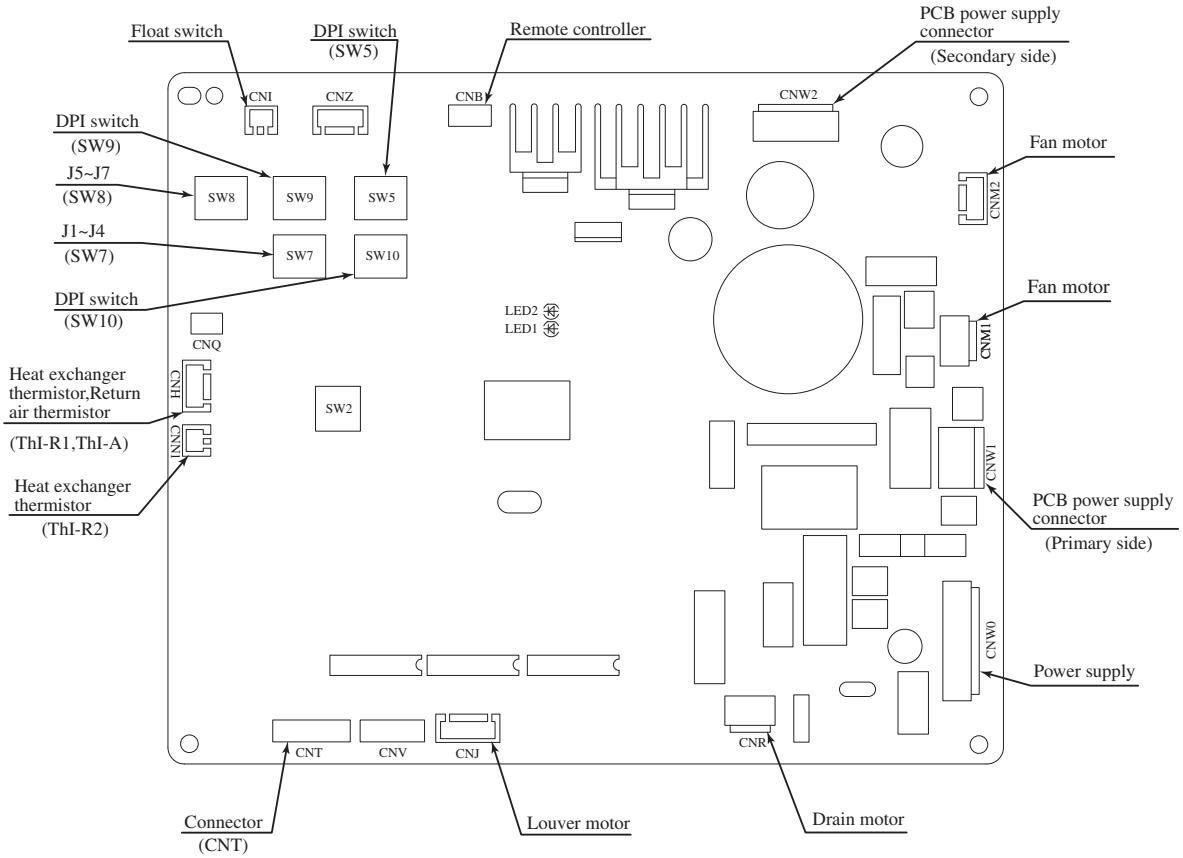
(b) Replacement procedure of indoor unit microcomputer printed circuit board

Microcomputer printed circuit board can be replaced with following procedure.
(i) Confirm the parts numbers.

Model	Parts number	Model	Parts number
FDTA 151~401	PJA505A122ZD	FDKN	PHA505A018ZF
FDTA 501, 601	PJA505A122ZF	FDUM, FDU	PJA505A131ZC
FDEN	PJA505A128ZF	FDTC	PJA505A142ZA

Parts layout on the indoor unit PCB

Model: FDTC series



● SETTING BY THE JUMPER WIRE

Name		Function
J1 (SW7-1)	Closed	Input signal for CnT - Level input
	Open (1)	Input signal for CnT - Pulse input
J2 (SW7-2)	Closed	Heating thermostat OFF-Lo Fan speed
	Open (1)	Heating thermostat OFF-Stop for 5 min then Lo fan speed
J3 (SW7-3)	Closed	Input signal for CnT - Normal operation (Run/Stop)
	Open (1)	Input signal for CnT - Operation permission/prohibition
J4 (SW7-4)	Closed	Normal
	Open (1)	Set point for Heating offset by +3˚C
J5 (SW8-1)	Closed	Louver free stop control - Invalid
	Open (1)	Louver free stop control - Valid
J6 (SW8-2)	Closed	Freeze prevention fan control activated.
	Open (1)	Freeze prevention fan control deactivated.
J7 (SW8-3)	Closed	Louver position : Normal
	Open (1)	Louver position : For wind 1

Notes (1) "Open" means that jumper wire is not provided on the PCB or the connection is cut.

(2) The replacement PCB is not equipped with jumpers J1 ~ J7. Instead, SW7 and 8, with the same functions as jumpers J1~J7, are used in the position where the jumpers were previously. Set SW7 and 8 locally in accordance with the above table.

● CONTROL SETTING SWITCH (SW5, SW9, SW10)

Function of DIP switch SW5 master/slave setting and filter sign setting (Usually all turned OFF)

Switch				Function
SW5-1	ON	SW5-2	ON	Slave c
			OFF	Slave b
	OFF		ON	Slave a
			OFF	Master
SW5-3	ON	SW5-4	ON	Setting time : 1000hrs. (Unit stop)
			OFF	Setting time : 1000hrs. (Display)
	OFF		ON	Setting time : 600hrs. (Display)
			OFF	Setting time : 180hrs. (Display factory setting)

Function of DIP switch SW9

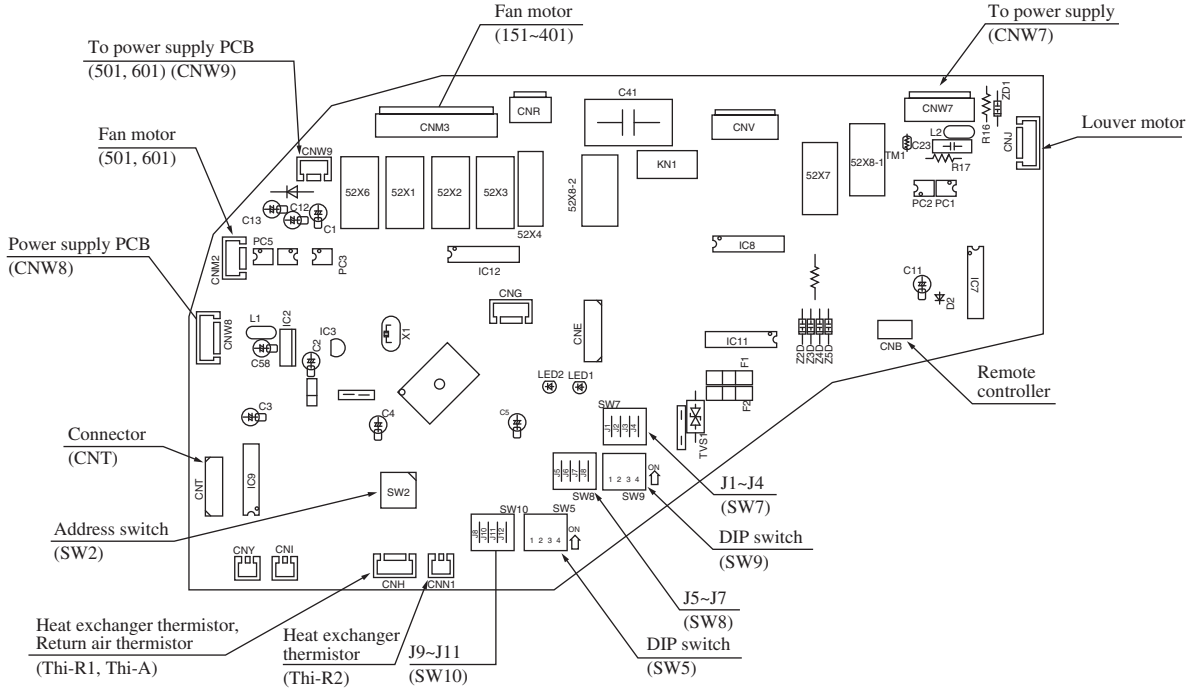
Switch		Function
SW9-3	ON	Emergency operation
	OFF	Normal
SW9-4	ON	Fan control : Powerful mode
	OFF	Fan control : Mild mode

Note (1) It is normally ON only in the case of SW9-4.

Function of DIP switch SW10

Switch				Function
SW10-1 (J9)			OFF	Auto swing function - Invalid
			ON	Auto swing function - Valid
SW10-2 (J10)	OFF	SW10-3 (J11)	OFF	Remote controller air flow –
			ON	Remote controller air flow 1 speed
	ON		OFF	Remote controller air flow 2 speed
			ON	Remote controller air flow 3 speed

Model: FDT series



● SETTING BY THE JUMPER WIRE

Name		Function
J1 (SW7-1)	Closed	Input signal for CnT - Level input
	Open (1)	Input signal for CnT - Pulse input
J2 (SW7-2)	Closed	Heating thermostat OFF-Lo Fan speed
	Open (1)	Heating thermostat OFF-Stop for 5 min then Lo fan speed
J3 (SW7-3)	Closed	Input signal for CnT - Normal operation (Run/Stop)
	Open (1)	Input signal for CnT - Operation permission/prohibition
J4 (SW7-4)	Closed	Normal
	Open (1)	Set point for Heating offset by +3˚C
J5 (SW8-1)	Closed	Louver free stop control - Invalid
	Open (1)	Louver free stop control - Valid
J6 (SW8-2)	Closed	Freeze prevention fan control activated.
	Open (1)	Freeze prevention fan control deactivated.
J7 (SW8-3)	Closed	Louver position : Normal
	Open (1)	Louver position : For wind 1

Note (1) "Open" means that jumper wire is not provided on the PCB or the connection is cut.

(2) The replacement PCB is not equipped with jumpers J1 ~ J7. Instead, SW7 and 8, with the same functions as jumpers J1~J7, are used in the position where the jumpers were previously. Set SW7 and 8 locally in accordance with the above table.

● CONTROL SETTING SWITCH (SW5, SW9, SW10)

Function of DIP switch SW5 Master/slave setting and filter sign setting (Usually all turned OFF)

Switch				Function
SW5-1	ON	SW5-2	ON	Slave c
			OFF	Slave b
	OFF		ON	Slave a
			OFF	Master
SW5-3	ON	SW5-4	ON	Setting time : 1000hrs. (Unit stop)
			OFF	Setting time : 1000hrs. (Display)
	OFF		ON	Setting time : 600hrs. (Display)
			OFF	Setting time : 180hrs. (Display factory setting)

Function of DIP switch SW9

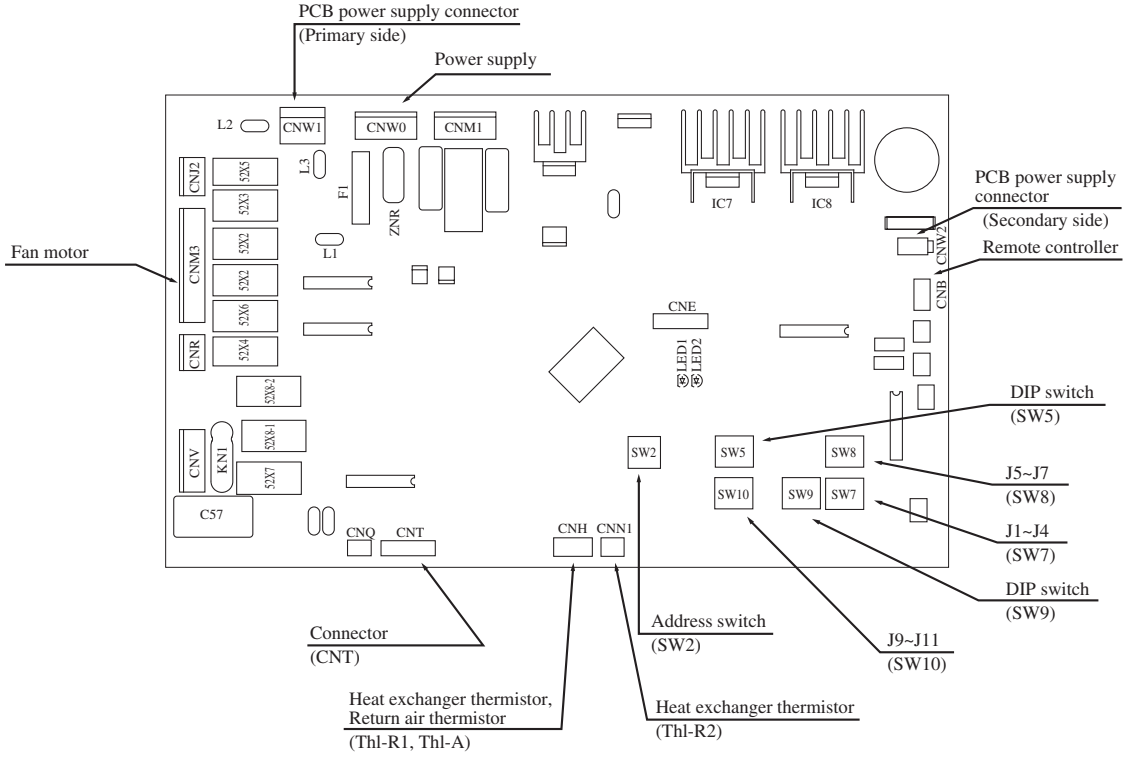
Switch		Function
SW9-3	ON	Emergency operation
	OFF	Normal
SW9-4	ON	Fan control : Powerful mode
	OFF	Fan control : Mild mode

Note (1) It is normally ON only in the case of SW9-4.

Function of DIP switch SW10

Switch				Function
SW10-1 (J9)			OFF	Auto swing function - Invalid
			ON	Auto swing function - Valid
SW10-2 (J10)	OFF	SW10-3 (J11)	OFF	Remote controller air flow –
			ON	Remote controller air flow 1 speed
	ON		OFF	Remote controller air flow 2 speed
			ON	Remote controller air flow 3 speed

Model: FDEN series



● SETTING BY THE JUMPER WIRE

Name		Function
J1 (SW7-1)	Closed	Input signal for CnT - Level input
	Open (1)	Input signal for CnT - Pulse input
J2 (SW7-2)	Closed	Heating thermostat OFF-Lo Fan speed
	Open (1)	Heating thermostat OFF-Stop for 5 min then Lo fan speed
J3 (SW7-3)	Closed	Input signal for CnT - Normal operation (Run/Stop)
	Open (1)	Input signal for CnT - Operation permission/prohibition
J4 (SW7-4)	Closed	Normal
	Open (1)	Set point for Heating offset by +3˚C
J5 (SW8-1)	Closed	Louver free stop control - Invalid
	Open (1)	Louver free stop control - Valid
J6 (SW8-2)	Closed	Freeze prevention fan control activated.
	Open (1)	Freeze prevention fan control deactivated.
J7 (SW8-3)	Closed	Louver position : Normal
	Open (1)	Louver position : For wind 1

Note (1) "Open" means that jumper wire is not provided on the PCB or the connection is cut.

(2) The replacement PCB is not equipped with jumpers J1 ~ J7. Instead, SW7 and 8, with the same functions as jumpers J1~J7, are used in the position where the jumpers were previously. Set SW7 and 8 locally in accordance with the above table.

● CONTROL SETTING SWITCH (SW5, SW9, SW10)

Function of DIP switch SW5 Master/slave setting and filter sign setting (Usually all turned OFF)

Switch				Function
SW5-1	ON	SW5-2	ON	Slave c
			OFF	Slave b
	OFF		ON	Slave a
			OFF	Master
SW5-3	ON	SW5-4	ON	Setting time : 1000hrs. (Unit stop)
			OFF	Setting time : 1000hrs. (Display)
	OFF		ON	Setting time : 600hrs. (Display)
			OFF	Setting time : 180hrs. (Display factory setting)

Function of DIP switch SW9

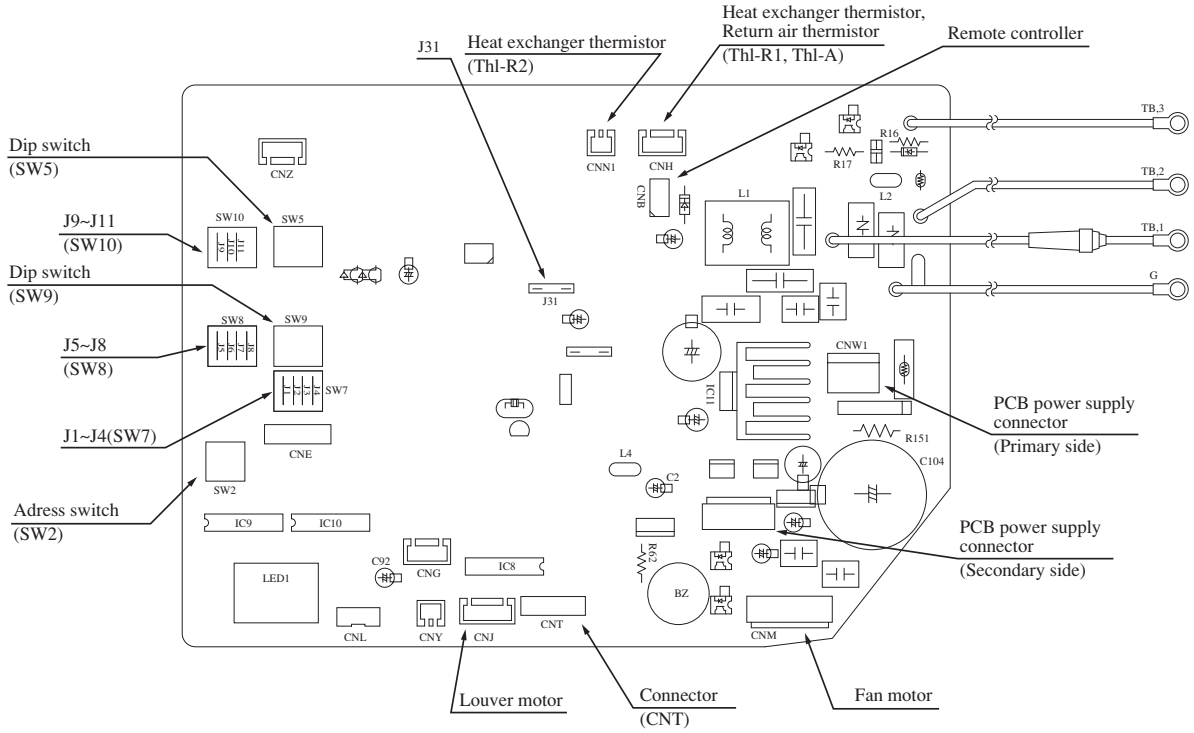
Switch		Function
SW9-3	ON	Emergency operation
	OFF	Normal
SW9-4	ON	Fan control : Powerful mode
	OFF	Fan control : Mild mode

Note (1) It is normally ON only in the case of SW9-4.

Function of DIP switch SW10

Switch				Function
SW10-1 (J9)			OFF	Auto swing function - Invalid
			ON	Auto swing function - Valid
SW10-2 (J10)	OFF	SW10-3 (J11)	OFF	Remote controller air flow –
			ON	Remote controller air flow 1 speed
	ON		OFF	Remote controller air flow 2 speed
			ON	Remote controller air flow 3 speed

Model: FDKN series



● SETTING BY THE JUMPER WIRE

Name		Function
J1 (SW7-1)	Closed	Input signal for CnT - Level input
	Open (1)	Input signal for CnT - Pulse input
J2 (SW7-2)	Closed	Heating thermostat OFF-Lo Fan speed
	Open (1)	Heating thermostat OFF-Stop for 5 min then Lo fan speed
J3 (SW7-3)	Closed	Input signal for CnT - Normal operation (Run/Stop)
	Open (1)	Input signal for CnT - Operation permission/prohibition
J4 (SW7-4)	Closed	Normal
	Open (1)	Set point for Heating offset by +3˚C
J5 (SW8-1)	Closed	Louver free stop control - Invalid
	Open (1)	Louver free stop control - Valid
J6 (SW8-2)	Closed	Freeze prevention fan control activated.
	Open (1)	Freeze prevention fan control deactivated.
J7 (SW8-3)	Closed	Louver position : Normal
	Open (1)	Louver position : For wind 1
J8 (SW8-4)	Closed	Model 151~251
	Open (1)	-
J31	Closed	Wireless remote controller
	Open (1)	Wired remote controller

Notes (1) "Open" means that jumper wire is not provided on the PCB or the connection is cut.

(2) The replacement PCB is not equipped with jumpers J1 ~ J8. Instead, SW7 and 8, with the same functions as jumpers J1~J8, are used in the position where the jumpers were previously. Set SW7 and 8 locally in accordance with the above table.

● CONTROL SETTING SWITCH (SW5, SW9, SW10)

Function of DIP switch SW5 master/slave setting and filter sign setting (Usually all turned OFF)

Switch				Function
SW5-1	ON	SW5-2	ON	Slave c
			OFF	Slave b
	OFF		ON	Slave a
			OFF	Master
SW5-3	ON	SW5-4	ON	Setting time : 1000hrs. (Unit stop)
			OFF	Setting time : 1000hrs. (Display)
	OFF		ON	Setting time : 600hrs. (Display)
			OFF	Setting time : 180hrs. (Display factory setting)

Function of DIP switch SW9

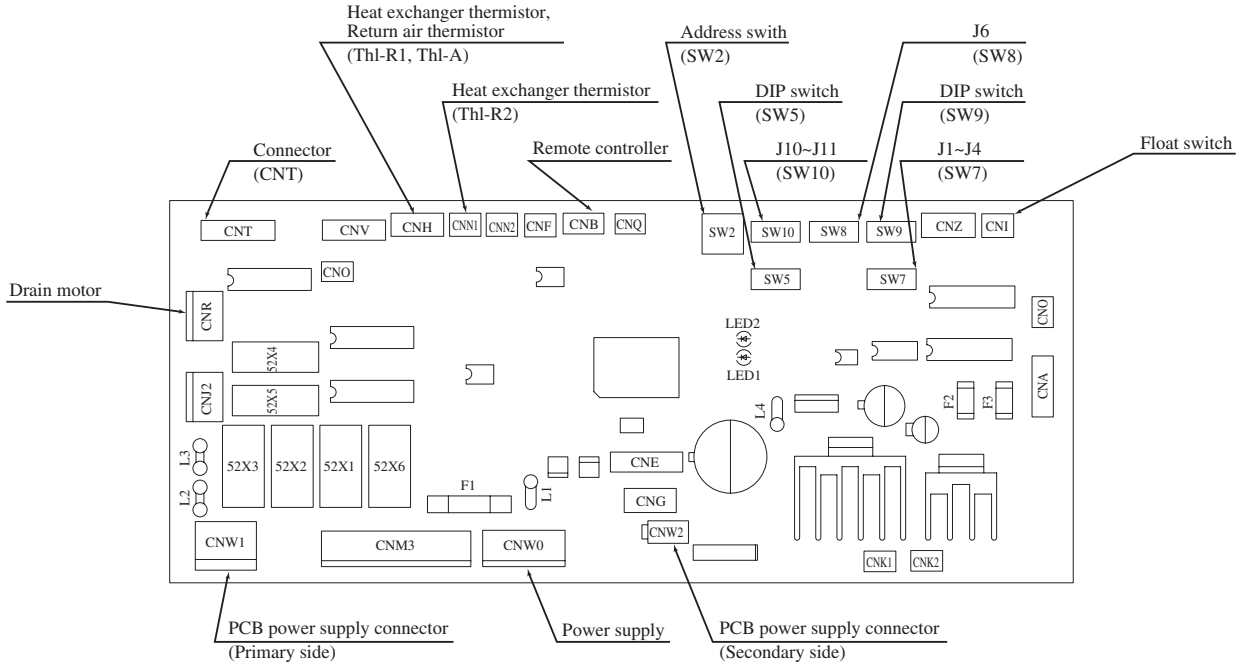
Switch		Function
SW9-1	OFF	Custom code - Change
	ON	Custom code - Normal
SW9-2	OFF	Power failure security - Valid
	ON	Power failure security - Invalid
SW9-3	ON	Emergency operation
	OFF	Normal
SW9-4	ON	Fan control : Powerful mode
	OFF	Fan control : Mild mode

Note (1) It is normally ON only in the case of SW9-4.

Function of DIP switch SW10

Switch				Function
SW10-1 (J9)	OFF	SW10-2 (J10)	OFF	Dehumidifying operation: 120 minutes (Louver level)
			ON	Dehumidifying operation: 60 minutes (Louver close)
	ON		OFF	Dehumidifying operation: 120 minutes (Louver close)
			ON	Dehumidifying operation: Invalid

Model: FDUM, FDU series



● SETTING BY THE JUMPER WIRE

Name		Function
J1 (SW7-1)	Closed	Input signal for CnT - Level input
	Open (1)	Input signal for CnT - Pulse input
J2 (SW7-2)	Closed	Heating thermostat OFF-Lo Fan speed
	Open (1)	Heating thermostat OFF-Stop for 5 min then Lo fan speed
J3 (SW7-3)	Closed	Input signal for CnT - Normal operation (Run/Stop)
	Open (1)	Input signal for CnT - Operation permission/prohibition
J4 (SW7-4)	Closed	Normal
	Open (1)	Set point for Heating offset by +3˚C
J6 (SW8-2)	Closed	Freeze prevention fan control activated
	Open (1)	Freeze prevention fan control deactivated

Note (1) "Open" means that jumper wire is not provided on the PCB or the connection is cut.

(2) The replacement PCB is not equipped with jumpers J1 ~ J4, J6. Instead, SW7 and 8, with the same functions as jumpers J1~J4, J6, are used in the position where the jumpers were previously. Set SW7 and 8 locally in accordance with the above table.

● CONTROL SETTING SWITCH (SW5, SW9, SW10)

Function of DIP switch SW5 Master/slave setting and filter sign setting (Usually all turned OFF)

Switch				Function
SW5-1	ON	SW5-2	ON	Slave c
			OFF	Slave b
	OFF		ON	Slave a
			OFF	Master
SW5-3	ON	SW5-4	ON	Setting time : 1000hrs. (Unit stop)
			OFF	Setting time : 1000hrs. (Display)
	OFF		ON	Setting time : 600hrs. (Display)
			OFF	Setting time : 180hrs. (Display factory setting)

Function of DIP switch SW9

Switch		Function
SW9-3	ON	Emergency operation
	OFF	Normal
SW9-4	ON	Fan control : High speed (High Ceiling)
	OFF	Fan control : Standard

Function of DIP switch SW10

Switch				Function
SW10-2 (J10)	OFF	SW10-3 (J11)	OFF	Remote controller air flow –
			ON	Remote controller air flow 1 speed
	ON		OFF	Remote controller air flow 2 speed
			ON	Remote controller air flow 3 speed

(c) Check method when the error code is display

Remote controller or LCD: Inspection LED, error code

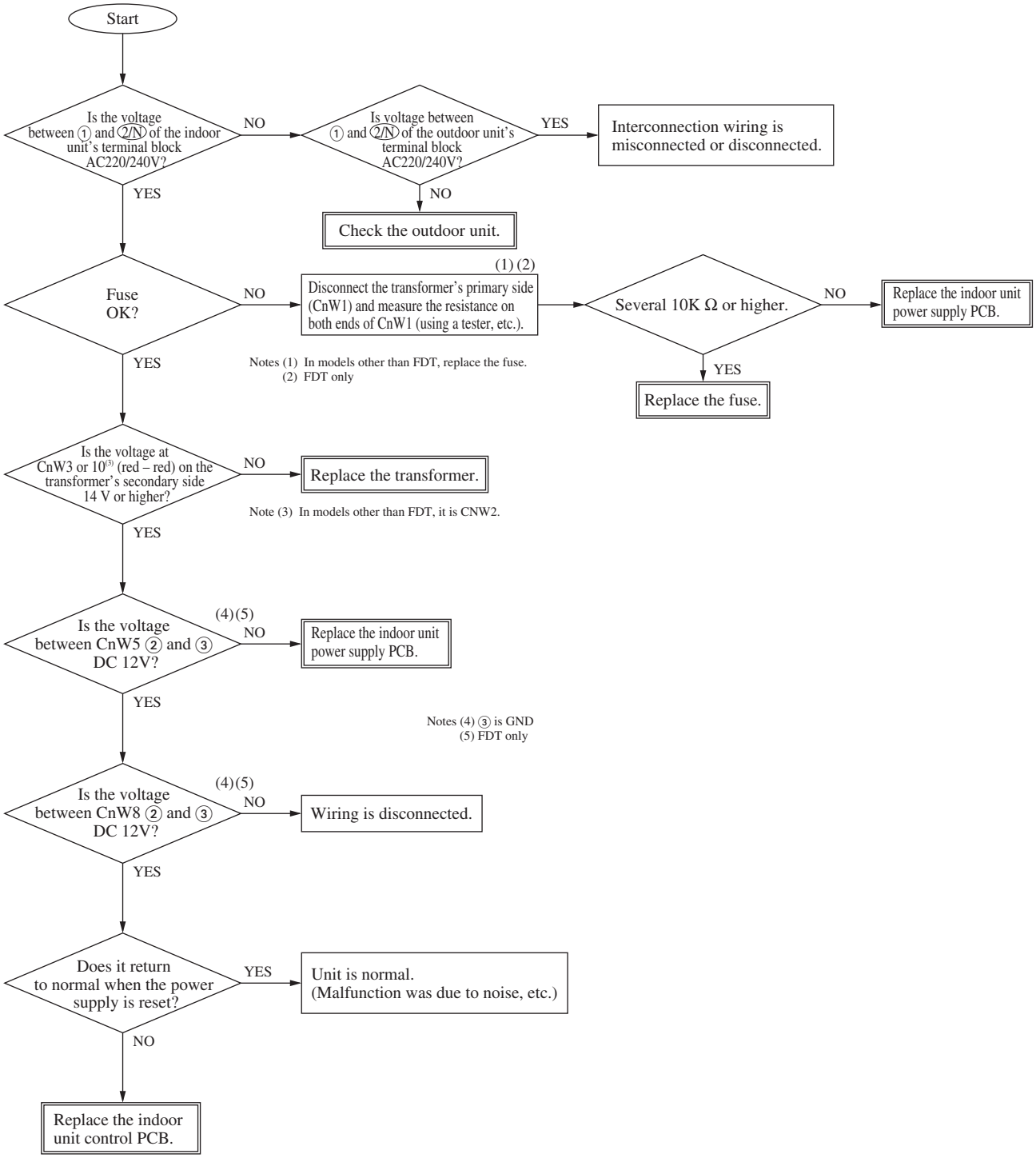
Indoor unit PCB: Red LED (inspection display), Green LED (CPU. normal display)

Outdoor unit PCB: Red LED (inspection display), Green LED (CPU. normal display)

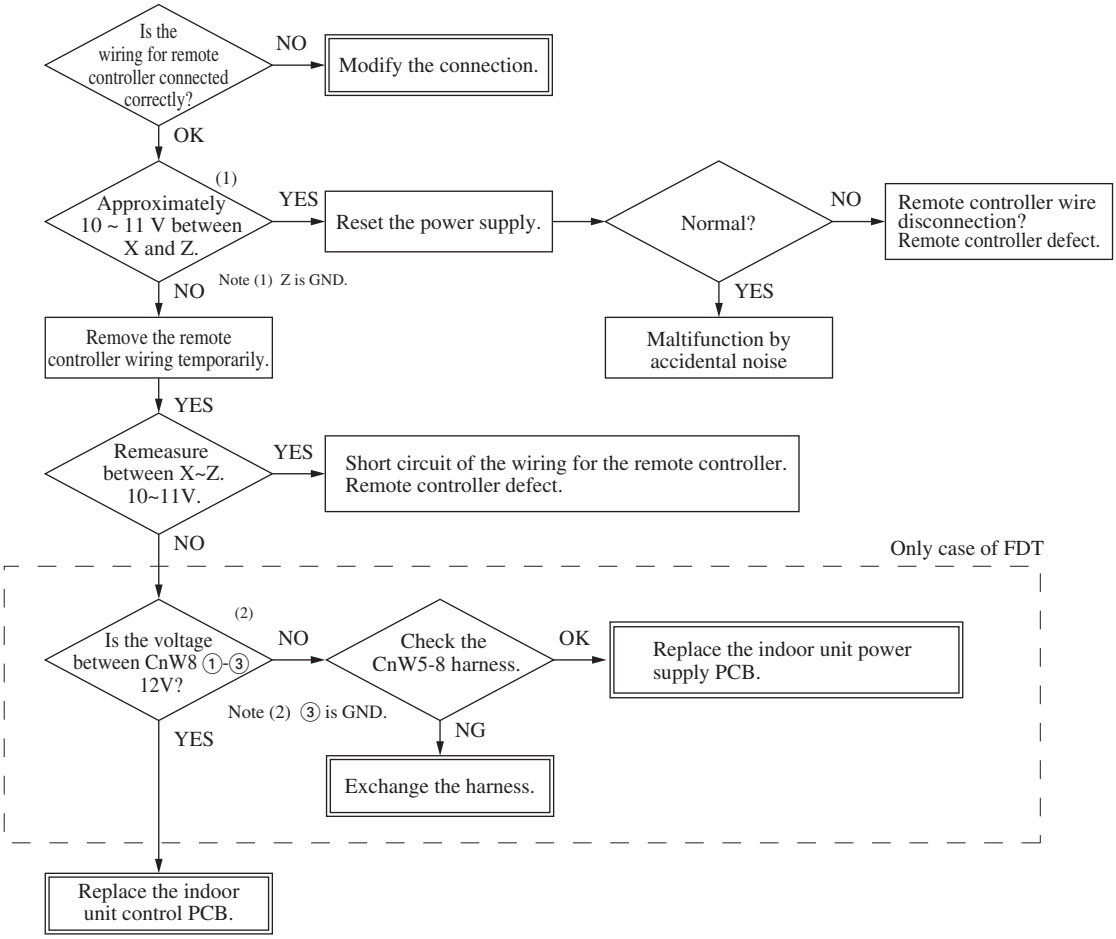
1 **Error display : No display**
LCD display : No display

[Power supply line error]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Stays OFF
Green LED	Stays OFF	Green LED	Stays OFF


Start
Is the voltage between ① and ②/N of the indoor unit's terminal block AC220/240V?
NO
Is voltage between ① and ②/N of the outdoor unit's terminal block AC220/240V?
YES
Interconnection wiring is misconnected or disconnected.
YES
NO
Check the outdoor unit.
Fuse OK?
NO
(1) (2)
Disconnect the transformer's primary side (CnW1) and measure the resistance on both ends of CnW1 (using a tester, etc.).
Several 10K Ω or higher.
NO
Replace the indoor unit power supply PCB.
YES
Replace the fuse.
Notes (1) In models other than FDT, replace the fuse.
(2) FDT only
YES
Is the voltage at CnW3 or 10(3) (red – red) on the transformer's secondary side 14 V or higher?
NO
Replace the transformer.
Note (3) In models other than FDT, it is CNW2.
YES
(4)(5)
Is the voltage between CnW5 ② and ③ DC 12V?
NO
Replace the indoor unit power supply PCB.
YES
Notes (4) ③ is GND
(5) FDT only
(4)(5)
Is the voltage between CnW8 ② and ③ DC 12V?
NO
Wiring is disconnected.
YES
Does it return to normal when the power supply is reset?
YES
Unit is normal.
(Malfunction was due to noise, etc.)
NO
Replace the indoor unit control PCB.

Indoor unit		Outdoor unit	
Red LED	3 time flash	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing



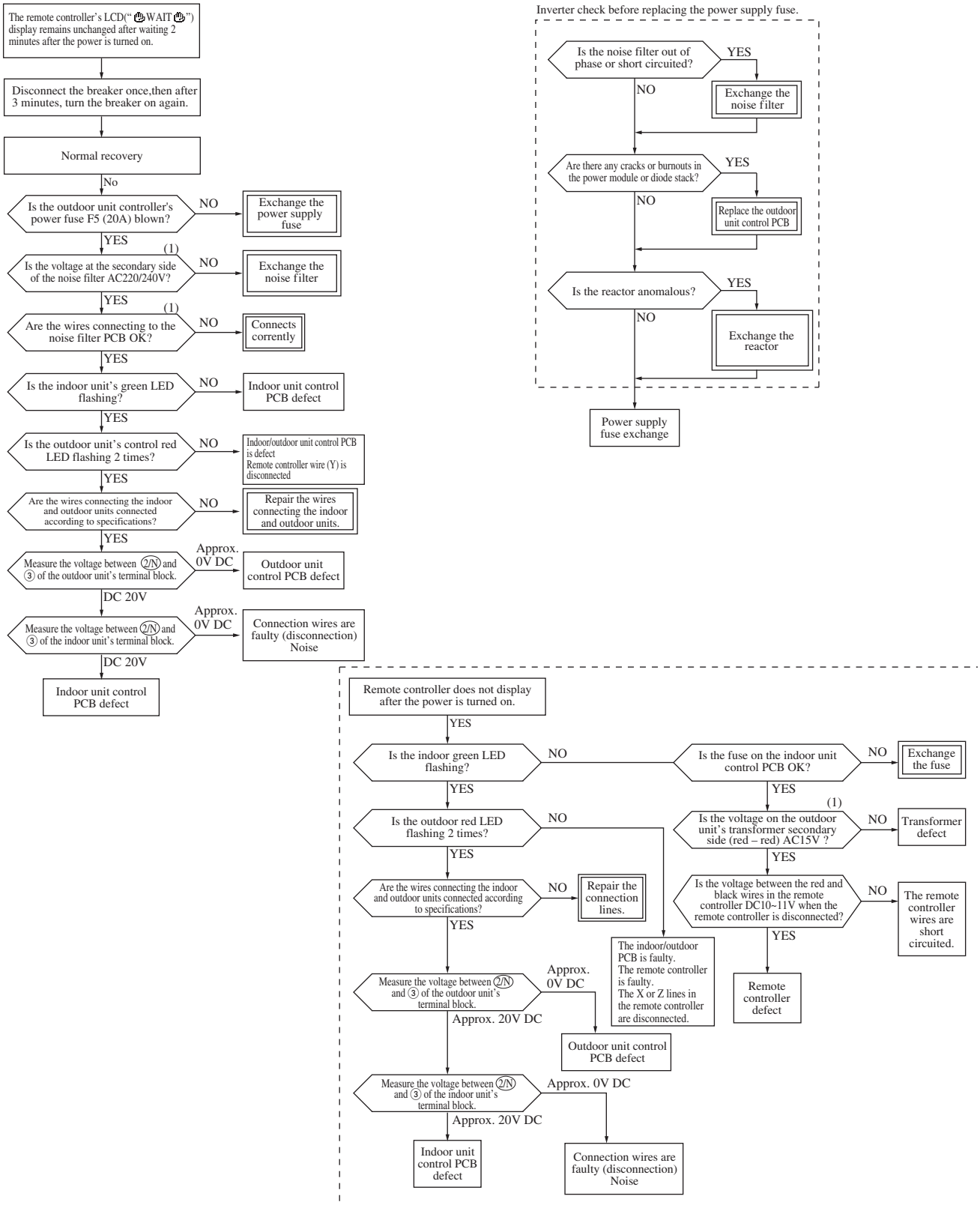
2 Error display "WAIT" — Indoor – outdoor communications trouble Initial (when the power is turned on)

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	2 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

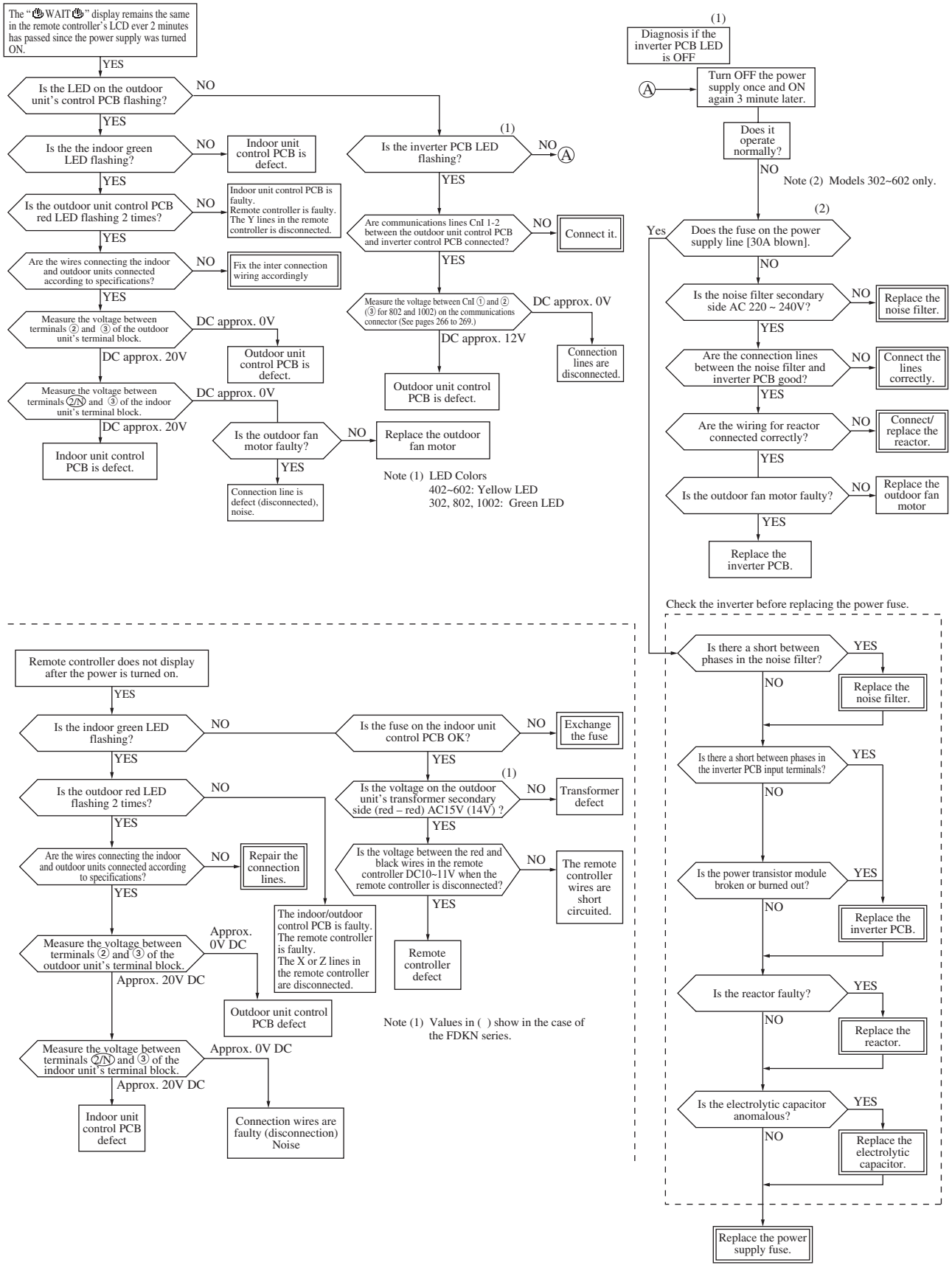
If the power supply breaker is turned on again in a short time (within 1 minute) the message "WAIT" may be displayed. In this case.Turn OFF the power supply once and ON again 3 minutes later.

Note (1) If trouble occurs during communications, the error code E5 is displayed (Outdoor, Red LED flashes 2 times). The check procedure is as shown below. (However, excluding connection related problems) Also, if the power supply is reset after E5 occurs, if the trouble is intermittent, it will be displayed in the LCD(" WAIT ").

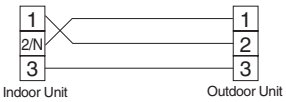
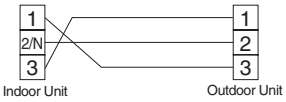
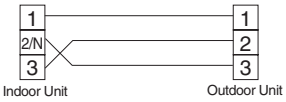
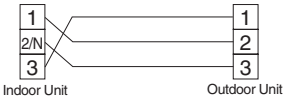
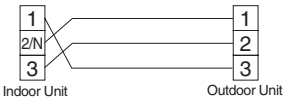
● Models 151~251


The remote controller's LCD(" WAIT ") display remains unchanged after waiting 2 minutes after the power is turned on.
Disconnect the breaker once,then after 3 minutes, turn the breaker on again.
Normal recovery
No
Is the outdoor unit controller's power fuse F5 (20A) blown?
NO
Exchange the power supply fuse
YES
(1)
Is the voltage at the secondary side of the noise filter AC220/240V?
NO
Exchange the noise filter
YES
(1)
Are the wires connecting to the noise filter PCB OK?
NO
Connects corrently
YES
Is the indoor unit's green LED flashing?
NO
Indoor unit control PCB defect
YES
Is the outdoor unit's control red LED flashing 2 times?
NO
Indoor/outdoor unit control PCB is defect
Remote controller wire (Y) is disconnected
YES
Are the wires connecting the indoor and outdoor units connected according to specifications?
NO
Repair the wires connecting the indoor and outdoor units.
YES
Measure the voltage between (2/N) and (3) of the outdoor unit's terminal block.
Approx. 0V DC
Outdoor unit control PCB defect
DC 20V
Measure the voltage between (2/N) and (3) of the indoor unit's terminal block.
Approx. 0V DC
Connection wires are faulty (disconnection) Noise
DC 20V
Indoor unit control PCB defect
Inverter check before replacing the power supply fuse.
Is the noise filter out of phase or short circuited?
YES
Exchange the noise filter
NO
Are there any cracks or burnouts in the power module or diode stack?
YES
Replace the outdoor unit control PCB
NO
Is the reactor anomalous?
YES
Exchange the reactor
NO
Power supply fuse exchange
Remote controller does not display after the power is turned on.
YES
Is the indoor green LED flashing?
NO
Is the fuse on the indoor unit control PCB OK?
NO
Exchange the fuse
YES
YES
Is the outdoor red LED flashing 2 times?
NO
(1)
Is the voltage on the outdoor unit's transformer secondary side (red – red) AC15V ?
NO
Transformer defect
YES
YES
Are the wires connecting the indoor and outdoor units connected according to specifications?
NO
Repair the connection lines.
Is the voltage between the red and black wires in the remote controller DC10~11V when the remote controller is disconnected?
NO
The remote controller wires are short circuited.
YES
YES
The indoor/outdoor PCB is faulty.
The remote controller is faulty.
The X or Z lines in the remote controller are disconnected.
Remote controller defect
Measure the voltage between (2/N) and (3) of the outdoor unit's terminal block.
Approx. 0V DC
Approx. 20V DC
Outdoor unit control PCB defect
Measure the voltage between (2/N) and (3) of the indoor unit's terminal block.
Approx. 0V DC
Approx. 20V DC
Indoor unit control PCB defect
Connection wires are faulty (disconnection) Noise

● Models 302~1002

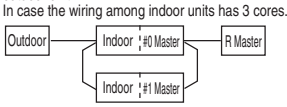

The "WAIT" display remains the same in the remote controller's LCD ever 2 minutes has passed since the power supply was turned ON.
YES
Is the LED on the outdoor unit's control PCB flashing?
NO
YES
Is the the indoor green LED flashing?
NO
Indoor unit control PCB is defect.
YES
Is the outdoor unit control PCB red LED flashing 2 times?
NO
Indoor unit control PCB is faulty. Remote controller is faulty. The Y lines in the remote controller is disconnected.
YES
Are the wires connecting the indoor and outdoor units connected according to specifications?
NO
Fix the inter connection wiring accordingly
YES
Measure the voltage between terminals ② and ③ of the outdoor unit's terminal block.
DC approx. 0V
Outdoor unit control PCB is defect.
DC approx. 20V
Measure the voltage between terminals 2/N and ③ of the indoor unit's terminal block.
DC approx. 0V
DC approx. 20V
Indoor unit control PCB is defect.
Is the outdoor fan motor faulty?
NO
Replace the outdoor fan motor
YES
Connection line is defect (disconnected), noise.
(1)
Is the inverter PCB LED flashing?
NO
A
YES
Are communications lines CnI 1-2 between the outdoor unit control PCB and inverter control PCB connected?
NO
Connect it.
YES
Measure the voltage between CnI ① and ② (③ for 802 and 1002) on the communications connector (See pages 266 to 269.)
DC approx. 0V
DC approx. 12V
Connection lines are disconnected.
Outdoor unit control PCB is defect.
Note (1) LED Colors
402~602: Yellow LED
302, 802, 1002: Green LED
(1)
Diagnosis if the inverter PCB LED is OFF
A
Turn OFF the power supply once and ON again 3 minute later.
Does it operate normally?
NO
Note (2) Models 302~602 only.
(2)
Yes
Does the fuse on the power supply line [30A blown].
NO
Is the noise filter secondary side AC 220 ~ 240V?
NO
Replace the noise filter.
YES
Are the connection lines between the noise filter and inverter PCB good?
NO
Connect the lines correctly.
YES
Are the wiring for reactor connected correctly?
NO
Connect/ replace the reactor.
YES
Is the outdoor fan motor faulty?
NO
Replace the outdoor fan motor
YES
Replace the inverter PCB.
Check the inverter before replacing the power fuse.
Is there a short between phases in the noise filter?
YES
NO
Replace the noise filter.
Is there a short between phases in the inverter PCB input terminals?
YES
NO
Is the power transistor module broken or burned out?
YES
NO
Replace the inverter PCB.
Is the reactor faulty?
YES
NO
Replace the reactor.
Is the electrolytic capacitor anomalous?
YES
NO
Replace the electrolytic capacitor.
Replace the power supply fuse.
Remote controller does not display after the power is turned on.
YES
Is the indoor green LED flashing?
NO
YES
Is the outdoor red LED flashing 2 times?
NO
YES
Are the wires connecting the indoor and outdoor units connected according to specifications?
NO
Repair the connection lines.
YES
Measure the voltage between terminals ② and ③ of the outdoor unit's terminal block.
Approx. 0V DC
Approx. 20V DC
Outdoor unit control PCB defect
Measure the voltage between terminals 2/N and ③ of the indoor unit's terminal block.
Approx. 0V DC
Approx. 20V DC
Indoor unit control PCB defect
Connection wires are faulty (disconnection) Noise
Is the fuse on the indoor unit control PCB OK?
NO
Exchange the fuse
YES
(1)
Is the voltage on the outdoor unit's transformer secondary side (red – red) AC15V (14V) ?
NO
Transformer defect
YES
Is the voltage between the red and black wires in the remote controller DC10~11V when the remote controller is disconnected?
NO
The remote controller wires are short circuited.
YES
Remote controller defect
The indoor/outdoor control PCB is faulty. The remote controller is faulty. The X or Z lines in the remote controller are disconnected.
Note (1) Values in ( ) show in the case of the FDKN series.

● Indication example in case of wrong interconnection

No.	Item	Wrong connection example	Indication
1	① and (2/N) reversing		Remote Control: "WAIT" Indoor: Green LED keeps flashing. Red LED stays OFF. Outdoor: Green LED keeps flashing. Red LED 2 time flash.
2	① and ③ reversing		Remote Control: No-indication. Indoor: Green LED stays OFF. Red LED stays OFF. Outdoor: Green LED keeps flashing. Red LED 2 time flash. The power supply is not supplied to the indoor unit's controller.
3	(2/N) and ③ reversing		Remote Control: "WAIT" Indoor: Green LED keeps flashing. Red LED stays OFF. Outdoor: Green LED keeps flashing. Red LED 2 time flash.
4	①, (2/N) and ③, wrongly connected		Remote Control: No-indication. Indoor: Green LED stays OFF. Red LED stays OFF. Outdoor: Green LED keeps flashing. Red LED 2 time flash. The power supply is not supplied to the indoor unit's controller.
5	①, (2/N) and ③, wrongly connected		Remote Control: "WAIT" Indoor: Green LED keeps flashing. Red LED stays OFF. Outdoor: Green LED keeps flashing. Red LED 2 time flash.

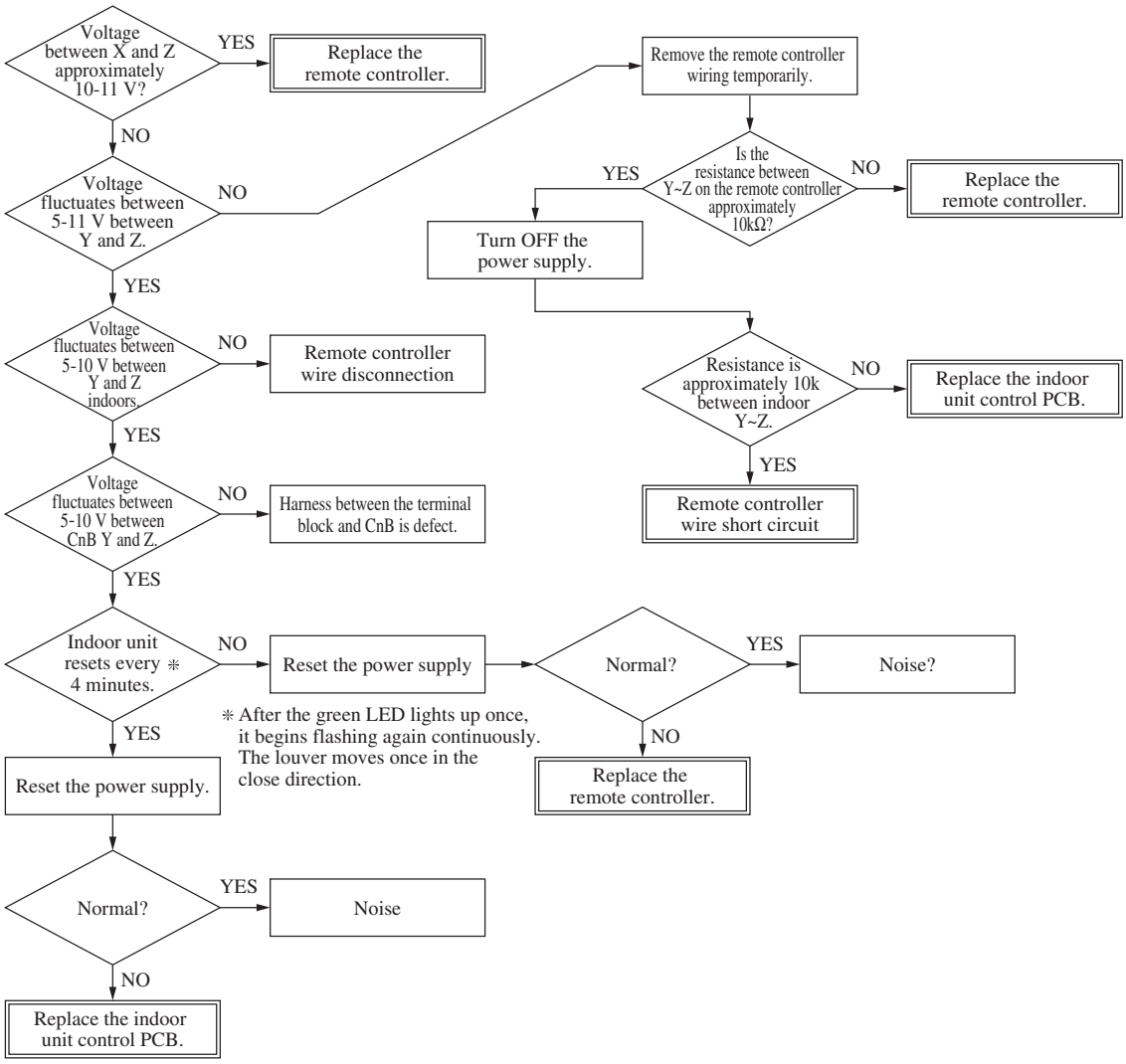
Remarks: If the remote control wires (red and black wires) are shorted, the green indoor unit LED is stays OFF and the remote controller does not work.

● Behavior when address setting is wrong

No.	Setting Method	Result	No.	Setting Method	Result
1	If the master/slave setting is not set when there are multiple slave units. In case the wiring among indoor units has 2 cores. 	● Remote controller display is normal. ● Only the indoor unit which is connected directly to the outdoor unit will run. Outdoor unit runs normally. ↓ Press the check SW and check the indoor units that are registered.	5	If the indoor units address setting are not set when they are controlled by single remote controller. 	Remote controller continues to show "WAIT." Remote controller display is normal. ↓ Press the check SW and check the registered indoor units.
2	If the master/slave setting is not set when there are multiple slave units. In case the wiring among indoor units has 3 cores. 	● Remote controller continues to show "WAIT." The outdoor red LED flashes 2 times.	6	If the address is set instead of master/slave setting in case prural indoor units are connected to an outdoor unit. In case the wiring among indoor units has 2 cores. 	● The remote controller display is normal. ● Only the indoor unit that in connected directly to the outdoor unit will operate. The outdoor unit operates normally. ↓ Press the check SW and check the registered indoor units.
3	If slave remote controller setting is not set. 	● Remote controller continues to show "WAIT."	7	If the address is set instead of master/slave setting in case prural indoor units are connected to an outdoor unit. In case the wiring among indoor units has 3 cores. 	● Remote controller continues to show "WAIT." The outdoor unit's red LED flashes 2 times.
4	If multiple slave units are set for a single unit. 	● Remote controller continues to show "WAIT." Indoor unit's red LED flashes 3 times (E14).	8	If both address and master/slave setting are set in case prural indoor units are connected to an outdoor unit. 	● Remote controller display is normal. ● Only the indoor units that are connected directly to the outdoor unit operate. The outdoor unit operates normally. ↓ Press the check SW and check the registered indoor units.

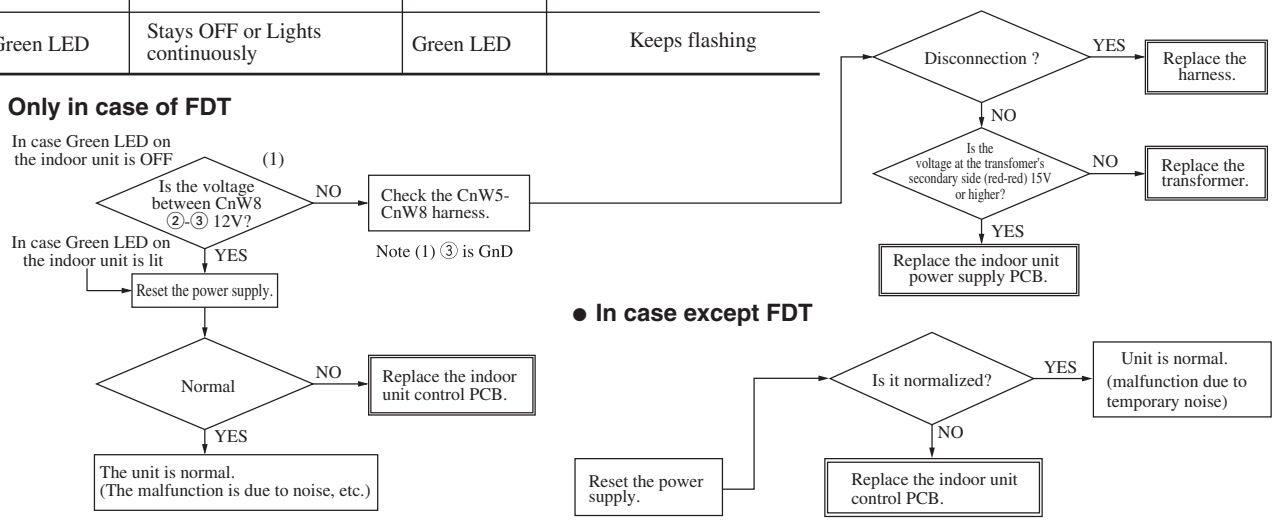
3 Error display : E1 [Communication error between the remote controller and the Indoor unit]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing


Voltage between X and Z approximately 10-11 V?
YES
Replace the remote controller.
NO
Voltage fluctuates between 5-11 V between Y and Z.
NO
Remove the remote controller wiring temporarily.
Is the resistance between Y~Z on the remote controller approximately 10kΩ?
YES
NO
Replace the remote controller.
Turn OFF the power supply.
YES
Voltage fluctuates between 5-10 V between Y and Z indoors.
NO
Remote controller wire disconnection
Resistance is approximately 10k between indoor Y~Z.
NO
Replace the indoor unit control PCB.
YES
Remote controller wire short circuit
YES
Voltage fluctuates between 5-10 V between CnB Y and Z.
NO
Harness between the terminal block and CnB is defect.
YES
Indoor unit resets every ✳ 4 minutes.
NO
Reset the power supply
Normal?
YES
Noise?
YES
✳ After the green LED lights up once, it begins flashing again continuously. The louver moves once in the close direction.
NO
Replace the remote controller.
Reset the power supply.
Normal?
YES
Noise
NO
Replace the indoor unit control PCB.

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Stays OFF
Green LED	Stays OFF or Lights continuously	Green LED	Keeps flashing

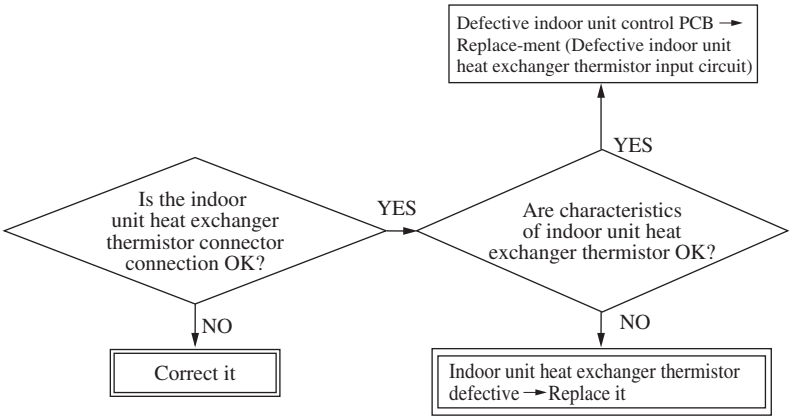
● **Only in case of FDT**


In case Green LED on the indoor unit is OFF
(1)
Is the voltage between CnW8 ②-③ 12V?
NO
Check the CnW5-CnW8 harness.
Note (1) ③ is GnD
In case Green LED on the indoor unit is lit
YES
Reset the power supply.
Normal
NO
Replace the indoor unit control PCB.
YES
The unit is normal. (The malfunction is due to noise, etc.)
Disconnection ?
YES
Replace the harness.
NO
Is the voltage at the transfomer's secondary side (red-red) 15V or higher?
NO
Replace the transformer.
YES
Replace the indoor unit power supply PCB.

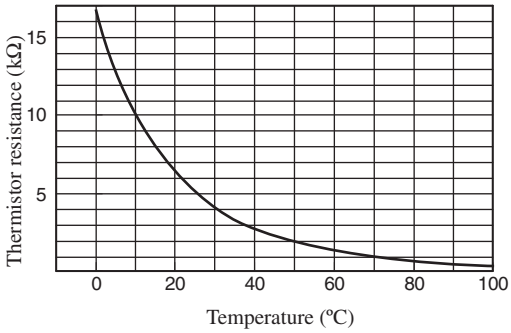
● **In case except FDT**

4 Error display : E6 [Defective indoor unit heat exchanger thermistor]

Indoor unit		Outdoor unit	
Red LED	1 time flash	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing


Is the indoor unit heat exchanger thermistor connector connection OK?
YES
NO
Correct it
Are characteristics of indoor unit heat exchanger thermistor OK?
YES
NO
Defective indoor unit control PCB → Replace-ment (Defective indoor unit heat exchanger thermistor input circuit)
Indoor unit heat exchanger thermistor defective → Replace it

Return air thermistor (TH-A)
Indoor unit heat exchanger thermistor (TH-R1, R2)
Resistance-temperature characteristics



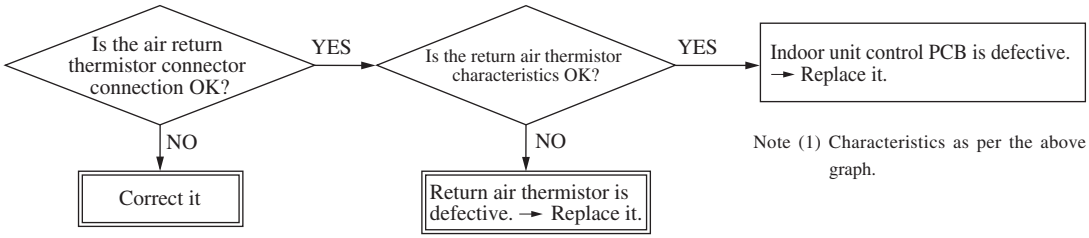
● Display condition

If a temperature of –50°C or lower is detected continuously for 5 seconds or longer by the thermistor, the compressor stops. After a 3 minute delay, the compressor restarts. The error occurs when this state is detected again within 60 minutes after the first detection.

---

5 Error display : E7 [Detective return air thermistor]

Indoor unit		Outdoor unit	
Red LED	1 time flash	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing


Is the air return thermistor connector connection OK?
YES
NO
Correct it
Is the return air thermistor characteristics OK?
YES
NO
Return air thermistor is defective. → Replace it.
Indoor unit control PCB is defective. → Replace it.

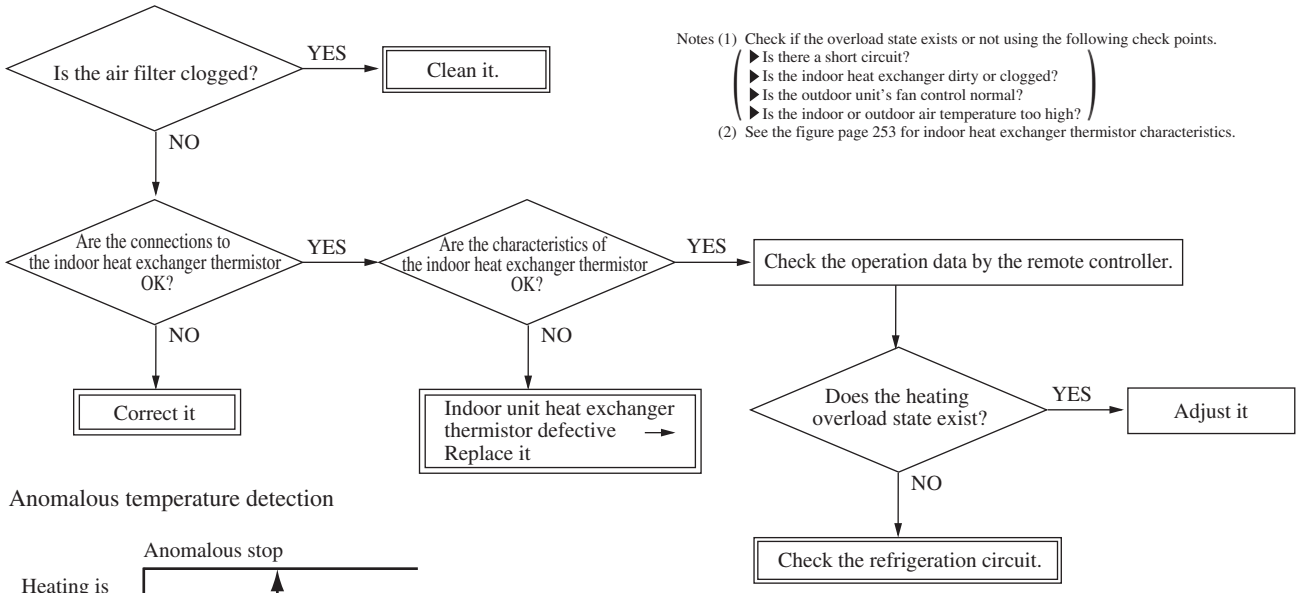
Note (1) Characteristics as per the above graph.

● Display condition

If a temperature of –50°C or lower is detected continuously for 5 seconds or longer by the thermistor, the compressor stops. After a 3 minute delay, the compressor restarts. The error occurs when this state is detected again within 60 minutes after the first detection.

6 Error display : E8 [Heating overload]

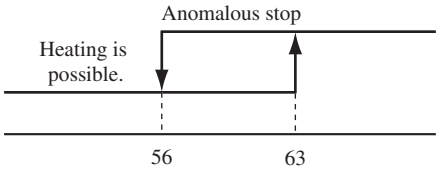
Indoor unit		Outdoor unit	
Red LED	1 time flash	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing



Notes (1) Check if the overload state exists or not using the following check points.
- ▶ Is there a short circuit?
- ▶ Is the indoor heat exchanger dirty or clogged?
- ▶ Is the outdoor unit's fan control normal?
- ▶ Is the indoor or outdoor air temperature too high?

(2) See the figure page 253 for indoor heat exchanger thermistor characteristics.

● Anomalous temperature detection



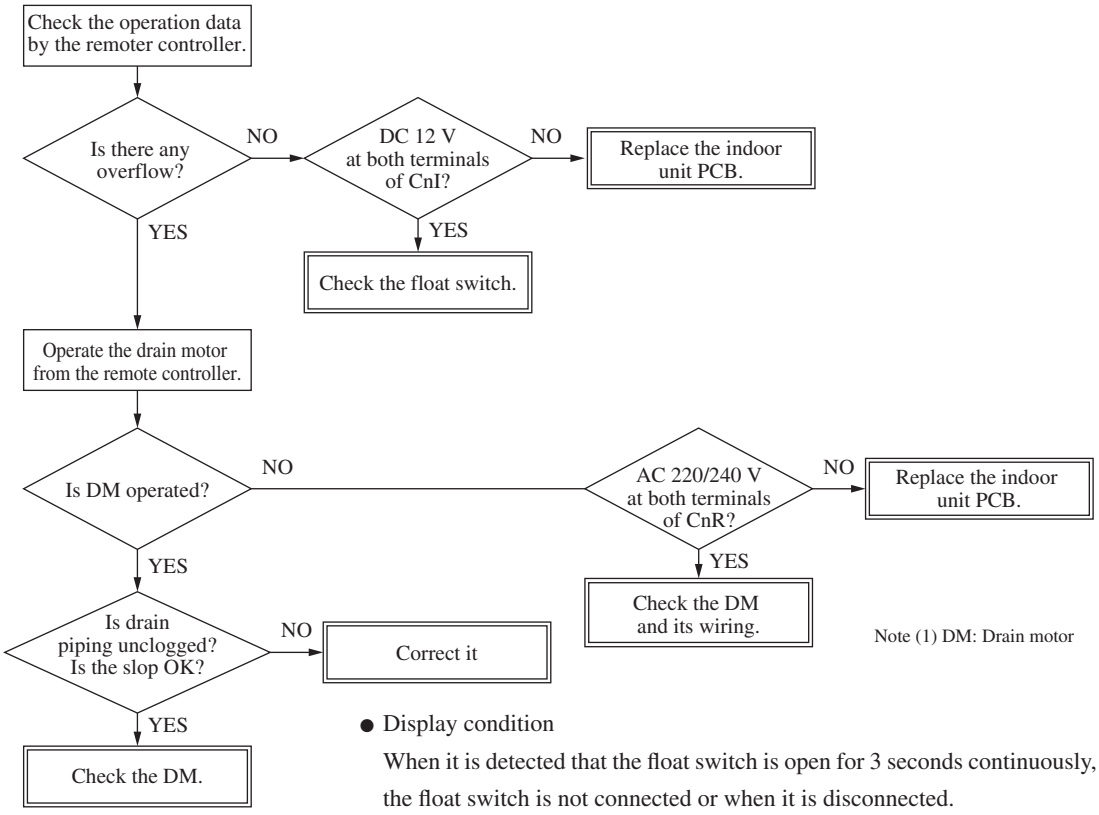
Indoor unit heat exchanger temp. (˚C)

● Display condition

An anomalous stop occurs if this state is detected 5 times within 60 minutes of the first detection, or if the overload state is detected continuously for 6 minutes.

7 Error display : E9 [Drain trouble]

Indoor unit		Outdoor unit	
Red LED	1 time flash	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing



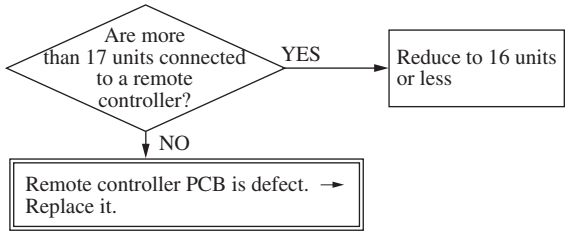
Note (1) DM: Drain motor

● Display condition

When it is detected that the float switch is open for 3 seconds continuously, when the float switch is not connected or when it is disconnected.

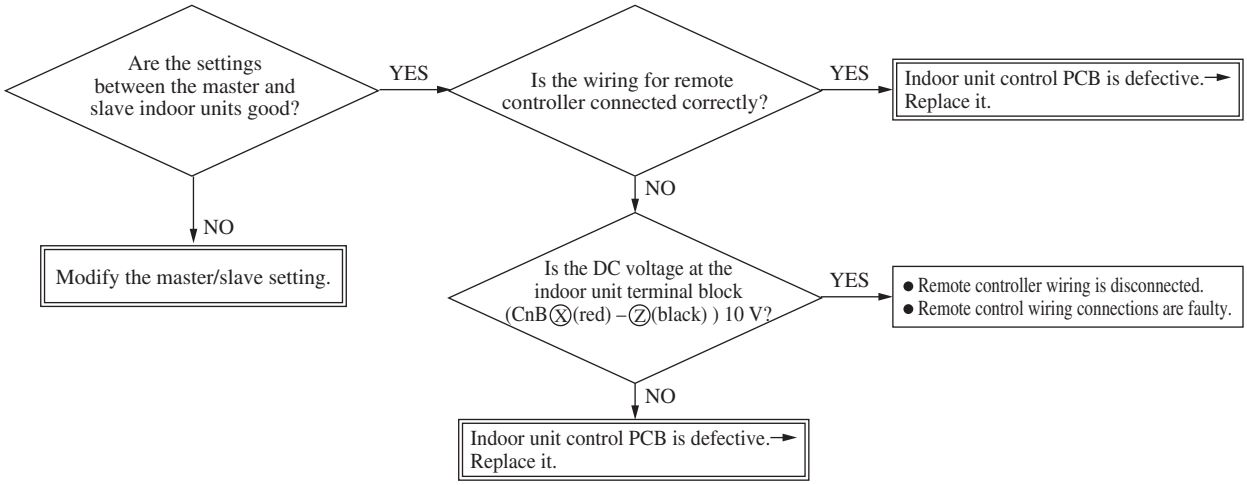
8 Error display : E10 [Control of 1 remote controller VS multiple units — Excessive number of units (more than 17 units)]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing


Are more than 17 units connected to a remote controller?
YES
Reduce to 16 units or less
NO
Remote controller PCB is defect. → Replace it.

9 Error display : E14 [Communications are faulty between master and slave indoor units]

Indoor unit		Outdoor unit	
Red LED	3 time flash	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing


Are the settings between the master and slave indoor units good?
YES
Is the wiring for remote controller connected correctly?
YES
Indoor unit control PCB is defective. → Replace it.
NO
NO
Modify the master/slave setting.
Is the DC voltage at the indoor unit terminal block (CnBⓍ(red) – Ⓩ(black)) 10 V?
YES
● Remote controller wiring is disconnected.
● Remote control wiring connections are faulty.
NO
Indoor unit control PCB is defective. → Replace it.

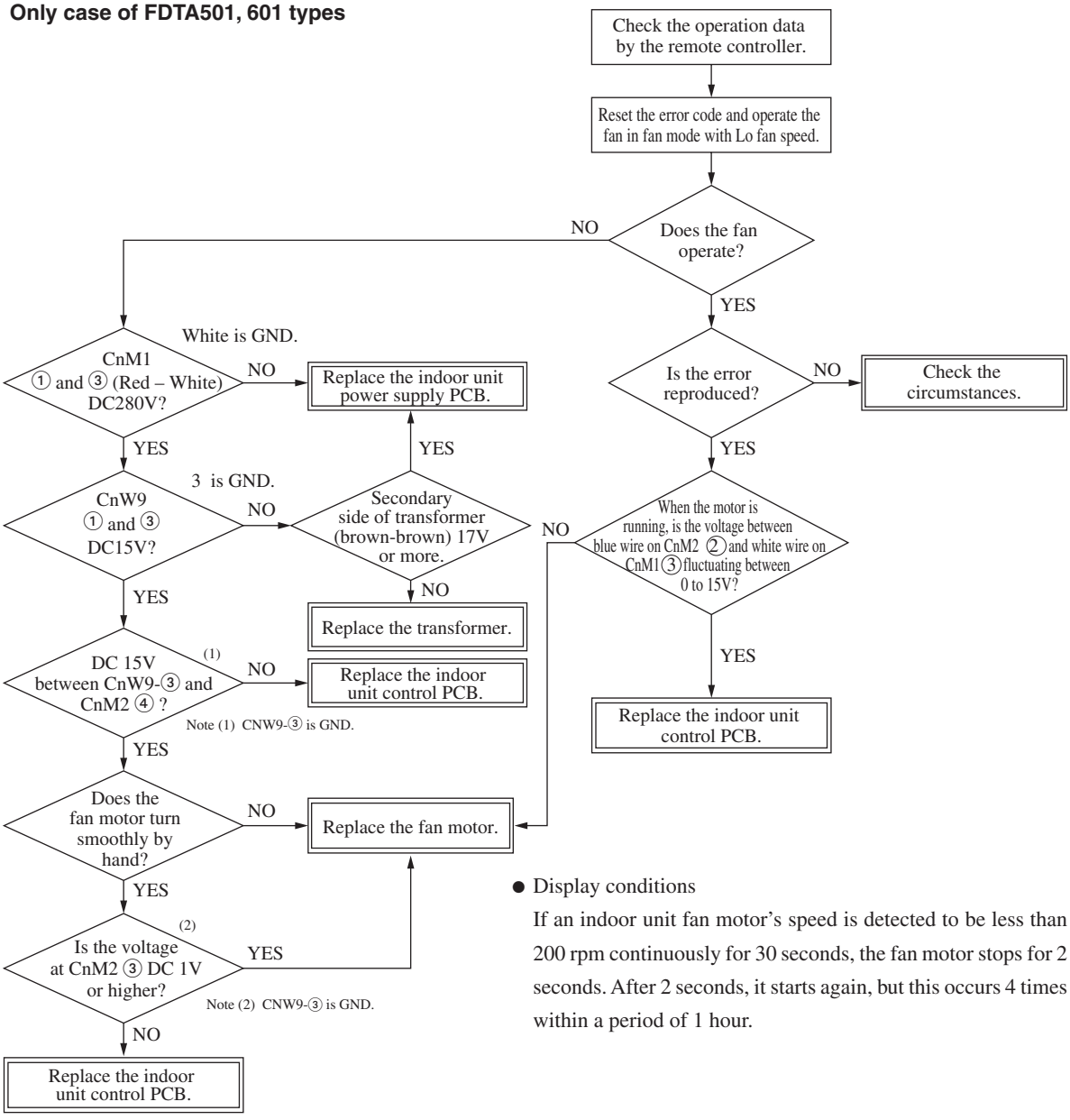
Note (1) Set DIP switches SW5-1 and SW5-2 on the indoor unit control PCB as shown in the following table.

Master setting at time of factory shipment		Indoor unit			
		Master	Slave a	Slave b	Slave c
DIP switch	SW5-1	OFF	OFF	ON	ON
	SW5-2	OFF	ON	OFF	ON

10 Error display : E16 [Fan motor abnormalities]

Indoor unit		Outdoor unit	
Red LED	3 time flash	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing

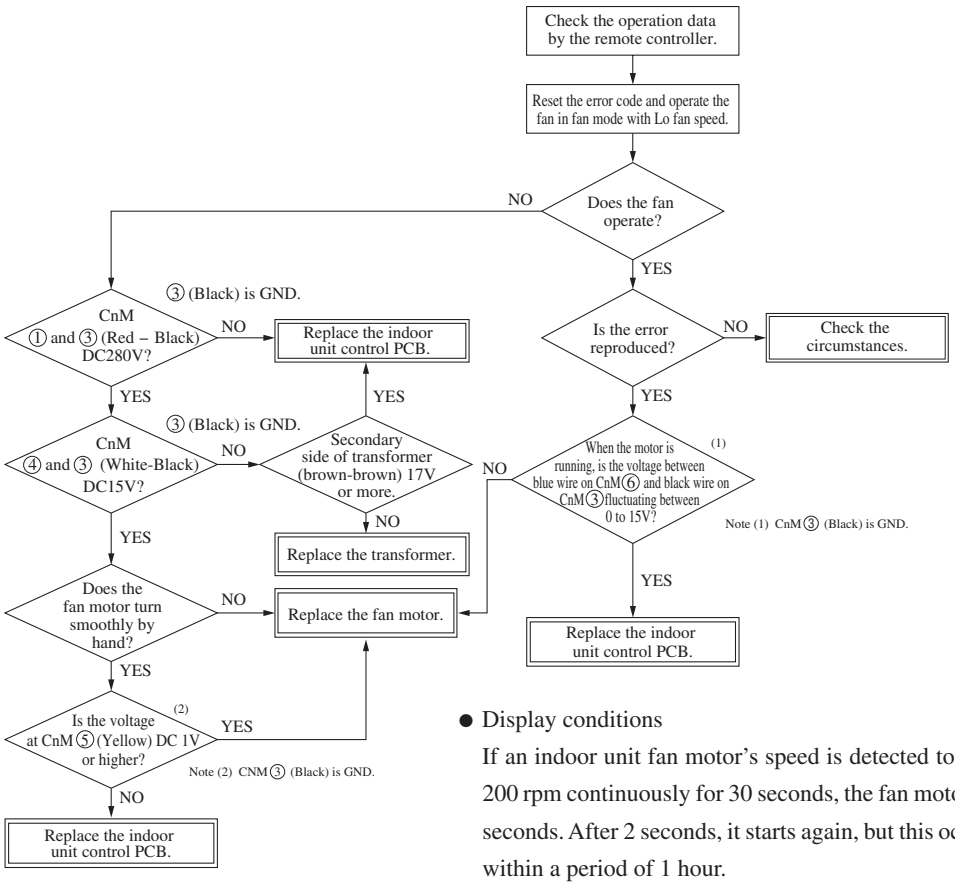
◆ **Only case of FDTA501, 601 types**


Check the operation data by the remote controller.
Reset the error code and operate the fan in fan mode with Lo fan speed.
Does the fan operate?
NO
YES
Is the error reproduced?
NO
Check the circumstances.
YES
When the motor is running, is the voltage between blue wire on CnM2 ② and white wire on CnM1 ③ fluctuating between 0 to 15V?
NO
YES
Replace the indoor unit control PCB.
White is GND.
CnM1 ① and ③ (Red – White) DC280V?
NO
Replace the indoor unit power supply PCB.
YES
3 is GND.
CnW9 ① and ③ DC15V?
NO
Secondary side of transformer (brown-brown) 17V or more.
YES
NO
Replace the transformer.
YES
DC 15V between CnW9-③ and CnM2 ④ ?
(1)
NO
Replace the indoor unit control PCB.
Note (1) CNW9-③ is GND.
YES
Does the fan motor turn smoothly by hand?
NO
Replace the fan motor.
YES
Is the voltage at CnM2 ③ DC 1V or higher?
(2)
YES
Note (2) CNW9-③ is GND.
NO
Replace the indoor unit control PCB.

● Display conditions

If an indoor unit fan motor's speed is detected to be less than 200 rpm continuously for 30 seconds, the fan motor stops for 2 seconds. After 2 seconds, it starts again, but this occurs 4 times within a period of 1 hour.

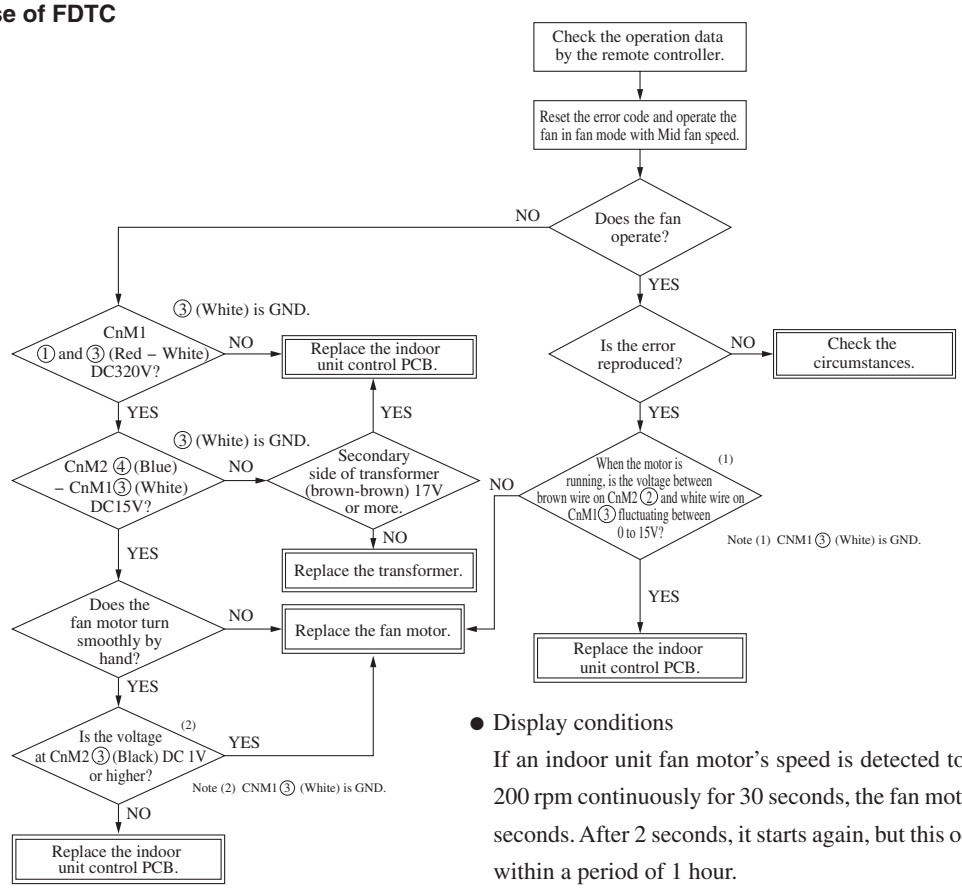
◆ **Only in case of FDKN**


Check the operation data by the remote controller.
Reset the error code and operate the fan in fan mode with Lo fan speed.
Does the fan operate?
NO
YES
Is the error reproduced?
NO
Check the circumstances.
YES
③ (Black) is GND.
CnM ① and ③ (Red – Black) DC280V?
NO
Replace the indoor unit control PCB.
YES
③ (Black) is GND.
CnM ④ and ③ (White-Black) DC15V?
NO
Secondary side of transformer (brown-brown) 17V or more.
NO
YES
Replace the transformer.
When the motor is running, is the voltage between blue wire on CnM⑥ and black wire on CnM③ fluctuating between 0 to 15V?
(1)
NO
YES
Note (1) CnM③ (Black) is GND.
Replace the indoor unit control PCB.
Does the fan motor turn smoothly by hand?
NO
Replace the fan motor.
YES
Is the voltage at CnM⑤ (Yellow) DC 1V or higher?
(2)
YES
NO
Note (2) CNM③ (Black) is GND.
Replace the indoor unit control PCB.

● Display conditions

If an indoor unit fan motor's speed is detected to be less than 200 rpm continuously for 30 seconds, the fan motor stops for 2 seconds. After 2 seconds, it starts again, but this occurs 4 times within a period of 1 hour.

Only in case of FDTC

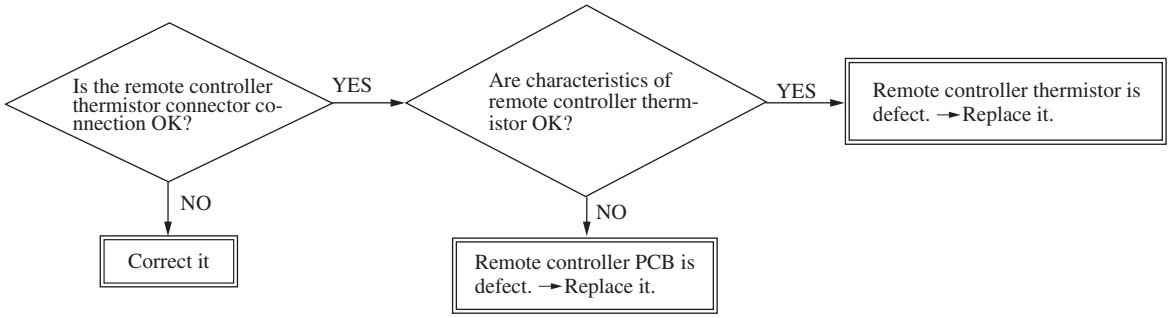

Check the operation data by the remote controller.
Reset the error code and operate the fan in fan mode with Mid fan speed.
Does the fan operate?
NO
YES
Is the error reproduced?
NO
Check the circumstances.
YES
③ (White) is GND.
CnM1 ① and ③ (Red – White) DC320V?
NO
Replace the indoor unit control PCB.
YES
③ (White) is GND.
CnM2 ④ (Blue) – CnM1③ (White) DC15V?
NO
Secondary side of transformer (brown-brown) 17V or more.
NO
YES
Replace the transformer.
When the motor is running, is the voltage between brown wire on CnM2 ② and white wire on CnM1③ fluctuating between 0 to 15V?
(1)
NO
YES
Note (1) CNM1 ③ (White) is GND.
Replace the indoor unit control PCB.
Does the fan motor turn smoothly by hand?
NO
Replace the fan motor.
YES
Is the voltage at CnM2③ (Black) DC 1V or higher?
(2)
YES
NO
Note (2) CNM1 ③ (White) is GND.
Replace the indoor unit control PCB.

● Display conditions

If an indoor unit fan motor's speed is detected to be less than 200 rpm continuously for 30 seconds, the fan motor stops for 2 seconds. After 2 seconds, it starts again, but this occurs 4 times within a period of 1 hour.

11 Error display : E28 [Defective remote controller thermistor.]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing



Resistance-temperature characteristic of remote controller thermister

Temperrature(˚C)	Resistance value (kΩ)	Temperrature(˚C)	Resistance value (kΩ)	Temperrature(˚C)	Resistance value (kΩ)	Temperrature(˚C)	Resistance value (kΩ)
0	65	14	33	30	16	46	8.5
1	62	16	30	32	15	48	7.8
2	59	18	27	34	14	50	7.3
4	53	20	25	36	13	52	6.7
6	48	22	23	38	12	54	6.3
8	44	24	21	40	11	56	5.8
10	40	26	19	42	9.9	58	5.4
12	36	28	18	44	9.2	60	5.0

(4) Error diagnosis procedures at the outdoor unit side

At the error diagnosis related to the outdoor unit, first of all check the error code on the remote controller and the illumination patterns of norma1 and inspection display lamps in the same manner as the case of indoor unit.
Then estimate the outline, the cause and the location of failure based on the pattern and proceed to the inspection and repair.
Since the self diagnosis function by means of the microcomputers of indoor/outdoor units provide the judgement of error of microcomputers themselves irregularity power supply line, overload, etc. caused by the installation space, inadequate volume of refrigerant etc., the location and cause of trouble will be discovered without difficulty.
In addition, the display lamps error code of indoor/outdoor unit is kept flashing, (except when the power supply is iterrupted) after the irregularity is automatically recovered to give irregularity information to the service personnel. If any mode of higher priority than the error retained in memory occurs after the reset of error, it is switched to that mode and saved in the memory.

(a) Replacement parts assembly related to the outdoor unit controller

Outdoor unit PCB, power transistor module, capacitor, noise filter, thermistor, (heat exchanger, discharge pipe, ambient air temperature, power transistor), fuse, transformer, etc.

(b) Replacement procedure of outdoor unit microcomputer printed circuit board.

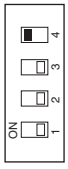
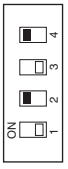
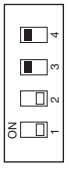
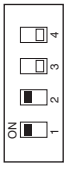
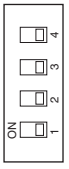
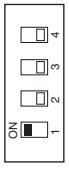
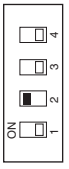
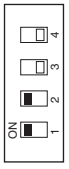
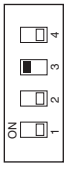
Microcomputer printed circuit board can replaced with following procedure.

1) Confirm the parts numbers.

Parts No.	Applicable Model
PCA505A093Z	FDCVA151HENR, 201HENR, 251HENR
PCA505A102ZA	FDCVA302HENR
PCA505A189ZA	FDCVA402HENAR, 502HENAR, 602HENAR
PCA505A189ZJ	FDCVA402HESAR, 502HESAR, 602HESAR
PCA505A089ZH	FDCVA802HESAR, 1002HESAR

2) Set the model using the model setting switch
   - FDCVA151~251 model : SW6
   - FDCVA302 model : SW4
   - FDCVA402~1002 model : JSW1

   Switch setting table (All switches are set in the OFF position when shipped from the factory.)

Model	151HENR	201HENR	251HENR	302HENR	402HENAR 402HESAR	502HENAR 502HESAR	602HENAR 602HESAR	802HESAR	1002HESAR
Switch setting table Set the switches ON or OFF for each switch No. (■ ON, □ OFF)									

3) Set the control select switch to match the previously set settings on the previous PCB.
   If the previously set settings were set with jumper wires, the control select switch should be set in the ON position if there was a jumper wire and in the OFF position if there wasn't a jumper wire.
4) Connect the faston terminals and connectors to the control PCB.
   When connecting the wires to the faston terminals, connect each wire to the terminal printed with the same color on the PCB.
   Note (1) When connecting the faston terminals to the control PCB, connect them so that there is no deformation of the far end of the PCB.

(c) Outdoor unit inverter PCB

● Replacement procedure of outdoor unit inverter PCB

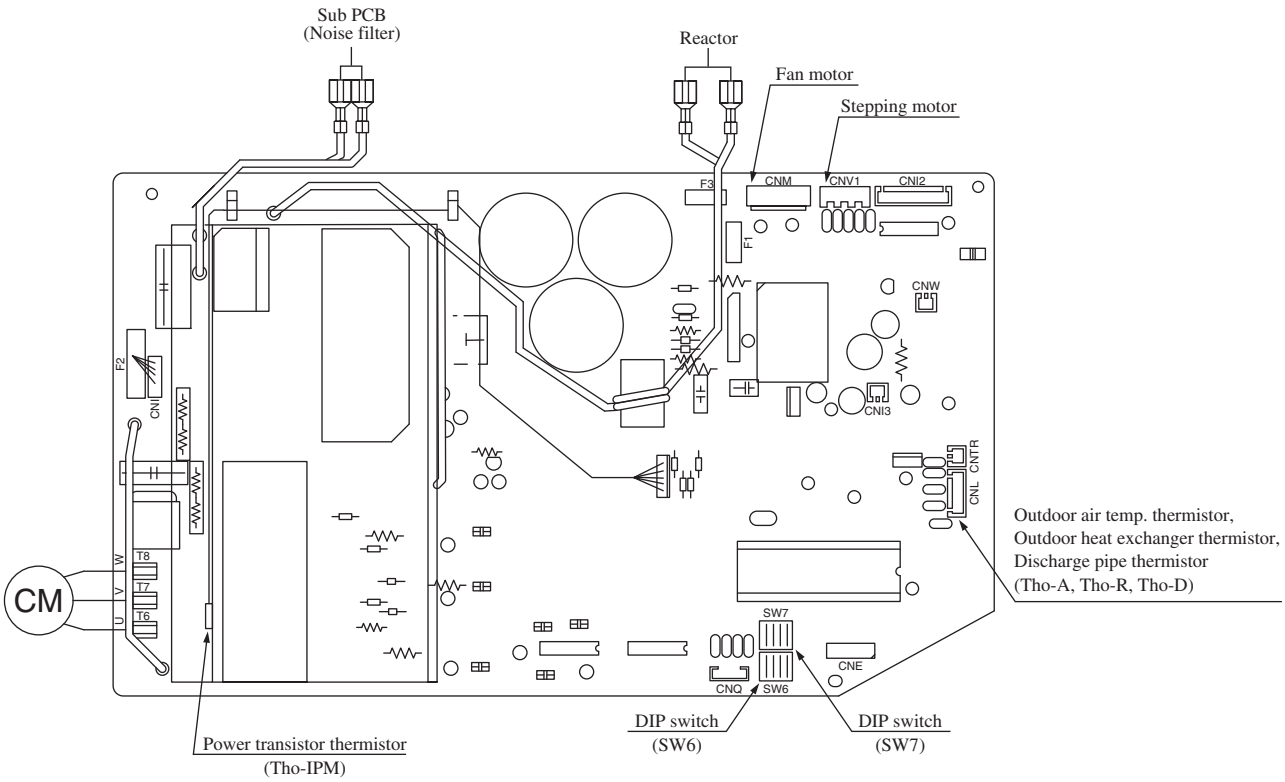
Inverter PCB can replaced with following procedure.

1) Confirm the parts numbers.

Parts No.	Model
PCA505A103ZY	FDCVA302HENR
PCA505A194A	FDCVA402HENAR, 502HENAR, 602HENAR
PCA505A108	FDCVA402HESAR, 502HESAR, 602HESAR
PCB505A044ZG	FDCVA802HESAR, 1002HESAR

Parts layout on the outdoor unit PCB

Models FDCVA151HENR, 201HENR, 251HENR



● Change by the jumper wire

Model	151	201	251
J1 (SW7-1)	None	None	None
J5 (SW6-1)	None	None	None
J6 (SW6-2)	None	With	None
J7 (SW6-3)	None	None	With
J8 (SW6-4)	With	With	With

Notes (1) "None" means that jumper wire is not provided on the PCB or the connection is cut

(2) The replacement PCB is not equipped with jumper wire J1 and J5~J8. Instead, SW6 and 7 are mounted in the same position and have the same functions as jumper wires J1 and J5~J8. Carry out the local settings in accordance with the table using SW6 and 7.

● Function of DIP switches (SW5)

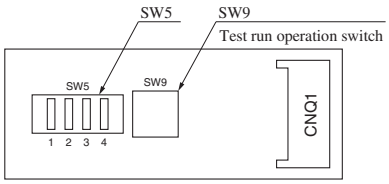
Switch		Function
SW5-1	ON	Defrost setting select for cold regions.
	OFF	Normal
SW5-2	ON	Snow-guard fan control-Effective
	OFF	Snow-guard fan control-Invalid
SW5-3	ON	Low refrigerant protection control-Effective
	OFF	Low refrigerant protection control-Invalid
SW5-4	ON	Test run operation-Heating
	OFF	Test run operation-Cooling

● Change by the J3

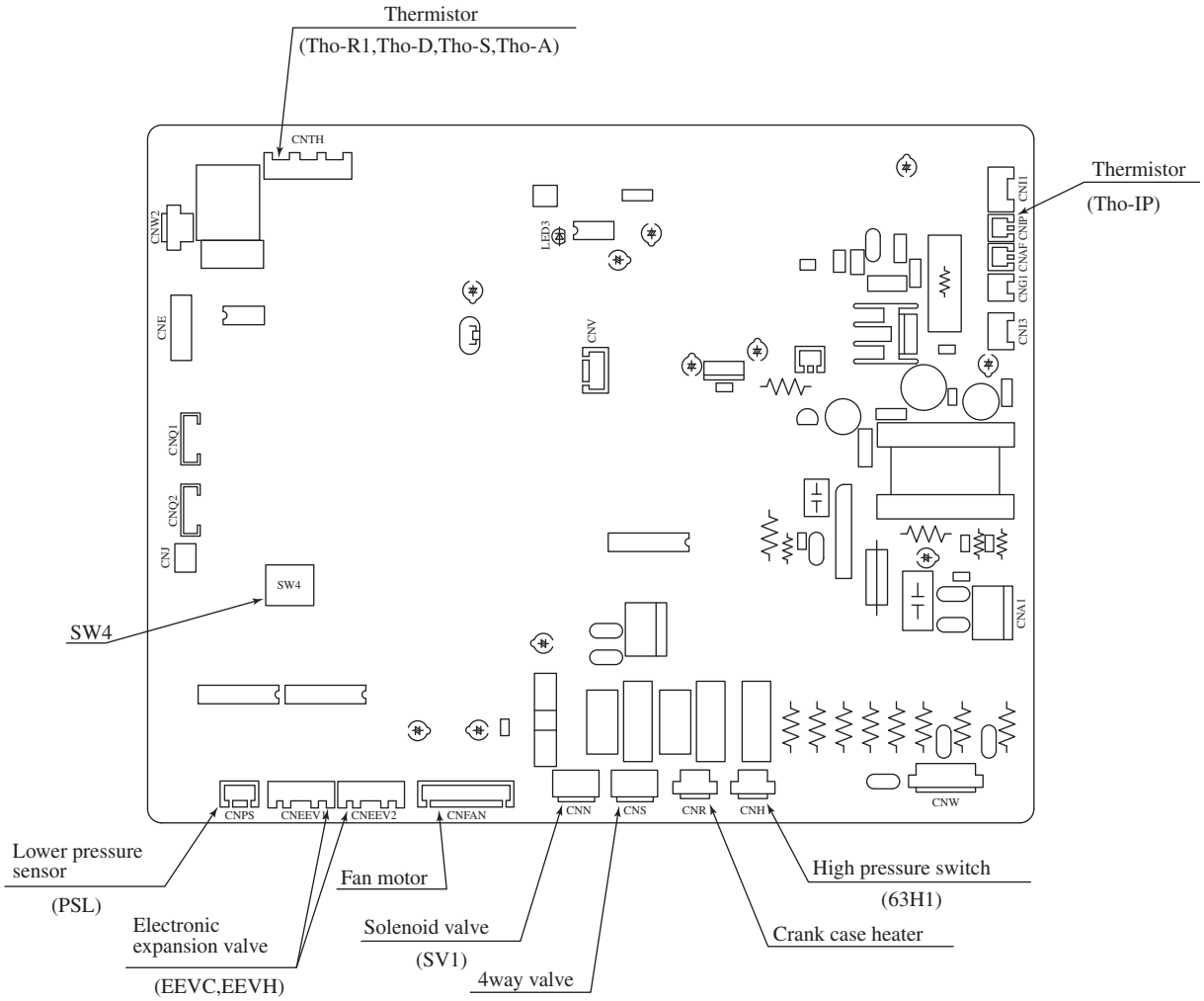
Switch		Function
J3 (SW7-3)	with	Model selection-Energy saving
	None	Model selection-Standard

Note (1) "None" means that jumper wire is not provided on the PCB or the connection is cut.

External PCB



Model FDCVA302HENR

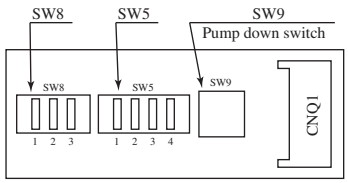


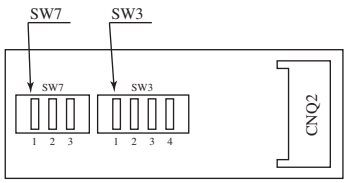
● **Function of DIP switch (SW3, 5, 7, 8)**

Switch		Function
SW3-1	ON	Defrost setting select for Cold regions
	OFF	Defrost setting select for Normal
SW3-2	ON	Snow-guard fan control Effective
	OFF	Snow-guard fan control Invalid
SW3-4	ON	Defrost prohibited period 37 min.
	OFF	Defrost prohibited period 45 min.
SW5-3	ON	Test run operation
	OFF	Normal
SW5-4	ON	Test run operation Heating
	OFF	Test run operation Cooling

Switch		Function
SW7-1	ON	Changes the fan control at installation of wind direction duct.
	OFF	Normal
SW7-2	ON	Anti-defrost : Enabled
	OFF	Anti-defrost : Disabled
SW8-2	ON	Cancels compressor dilution protection timer.
	OFF	Normal
SW8-3	ON	Cancels compressor starter Ⅲ.
	OFF	Normal

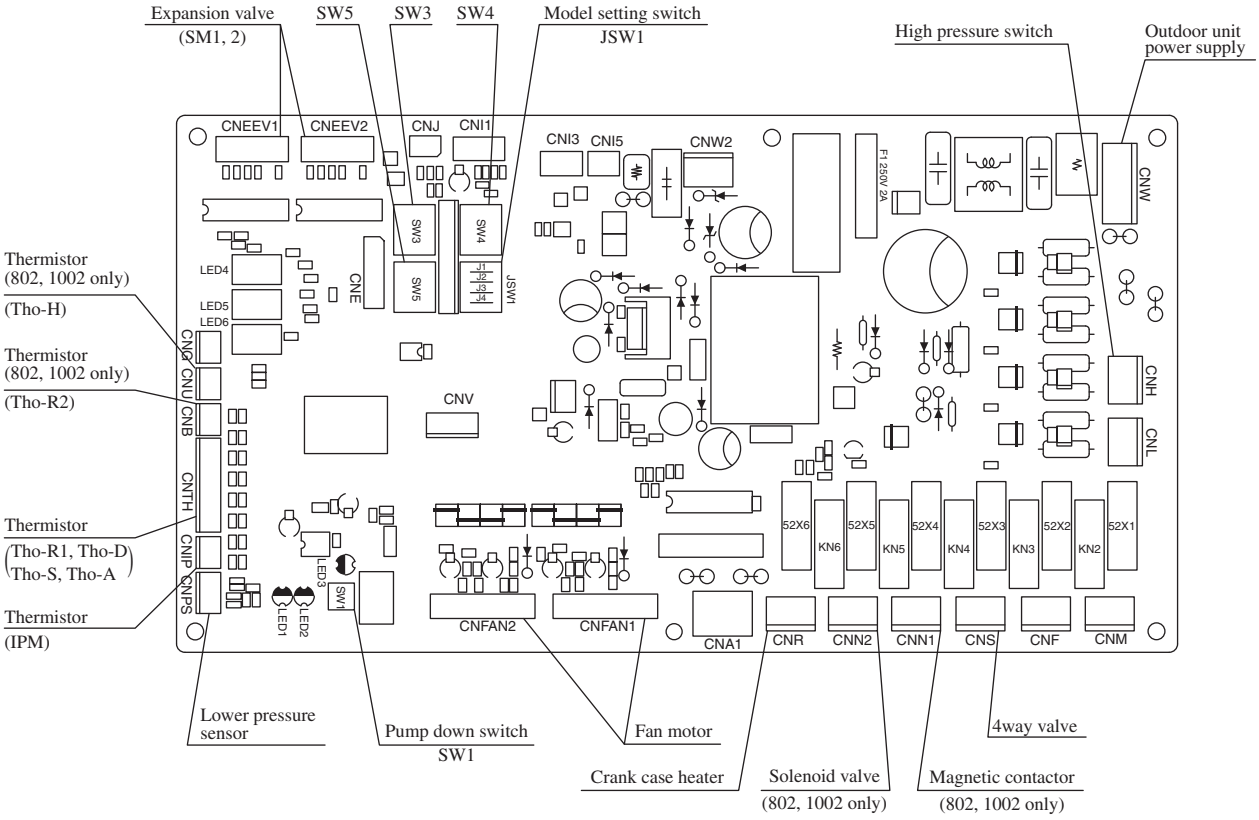
External PCB





Models FDCVA402HENAR, 502HENAR, 602HENAR
FDCVA402HESAR, 502HESAR, 602HESAR, 802HESAR, 1002HESAR

(This figure shows FDCVA402~602 model. The component layout of FDCVA802 and 1002 models are basically the same except for partial arrangement.)



● Function of DIP switch (SW3)

Switch		Function
SW3-1	ON	Defrost setting select for Cold regions
	OFF	Defrost setting select for Normal
SW3-2	ON	Snow-guard fan control Effective
	OFF	Snow-guard fan control Invalid
SW3-3	ON	Test run operation Effective
	OFF	Test run operation Invalid
SW3-4	ON	Test run operation Heating
	OFF	Test run operation Cooling

● Function of DIP switch (SW4)

Switch		Function
SW4-4	ON	Defrost prohibited period 37 min.
	OFF	Defrost prohibited period 45 min.

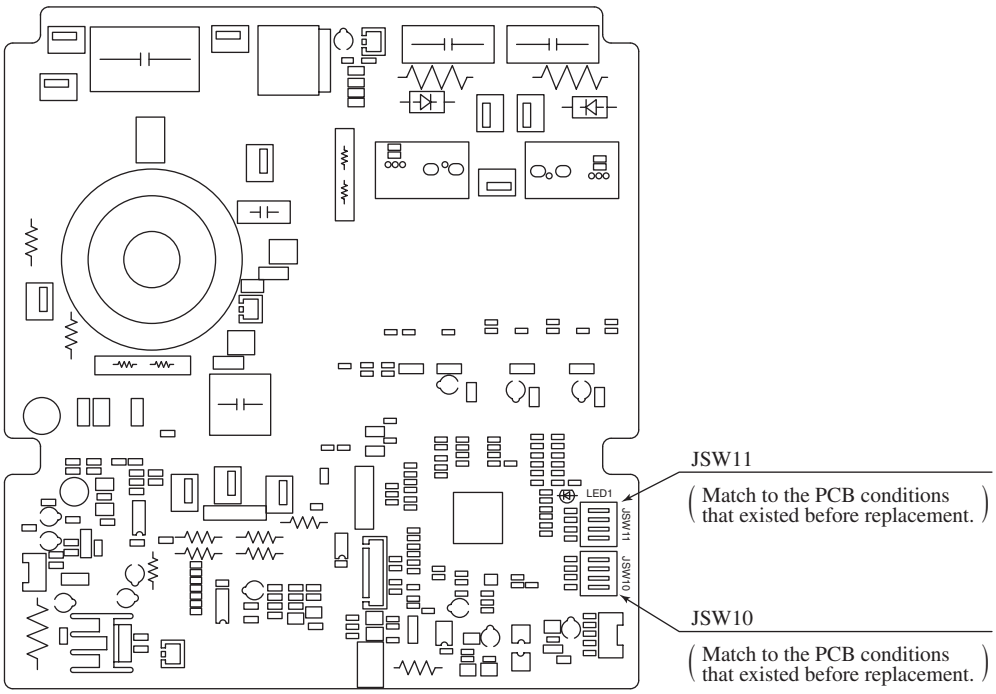
Note (1) Set SW4-4 as normally ON.

● Function of DIP switch (SW5)

Switch		Function
SW5-1	ON	High pressure control for existing piping Valid
	OFF	High pressure control for existing piping Invalid
SW5-2	ON	Cancels compressor dilution protection timer
	OFF	Normal
SW5-3	ON	Cancels compressor starter III
	OFF	Normal

Parts layout on the outdoor unit inverter PCB

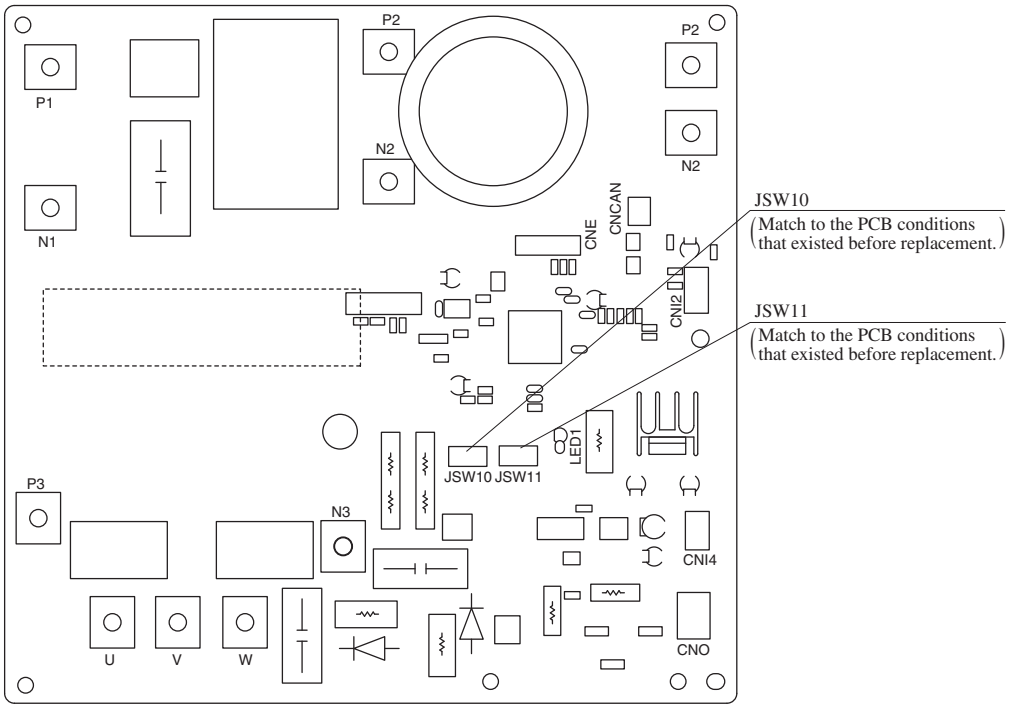
Model FDCVA302HENR



Notes (1) Apply the silicone grease supplied with the component uniformly to the surface of the power transistor on the new PCB, then mount it on the PCB. If the grease is not applied, the power transistor may be damaged. Use all the silicone grease.

(2) Tighten the power transistor mounting screws of the inverter PCB, and connect the terminal block, faston terminals and connectors. After connection, make sure tightening was not forgotten and parts were not partially inserted only. In particular, make sure the power transistor is not loose by tightening the mounting screws securely. If they are not tightened, the power transistor may be damaged.

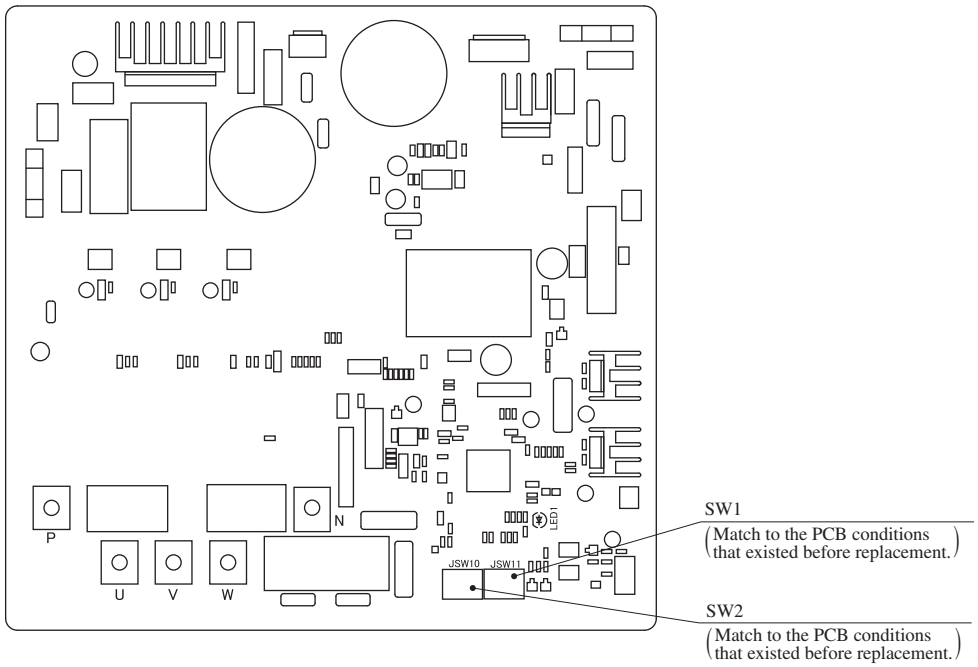
Models FDCVA402HENAR, 502HENAR, 602HENAR



Notes (1) Apply the silicone grease supplied with the component uniformly to the surface of the power transistor on the new PCB, then mount it on the PCB. If the grease is not applied, the power transistor may be damaged. Use all the silicone grease.

(2) Tighten the power transistor mounting screws of the inverter PCB, and connect the terminal block, faston terminals and connectors. After connection, make sure tightening was not forgotten and parts were not partially inserted only. In particular, make sure the power transistor is not loose by tightening the mounting screws securely. If they are not tightened, the power transistor may be damaged.

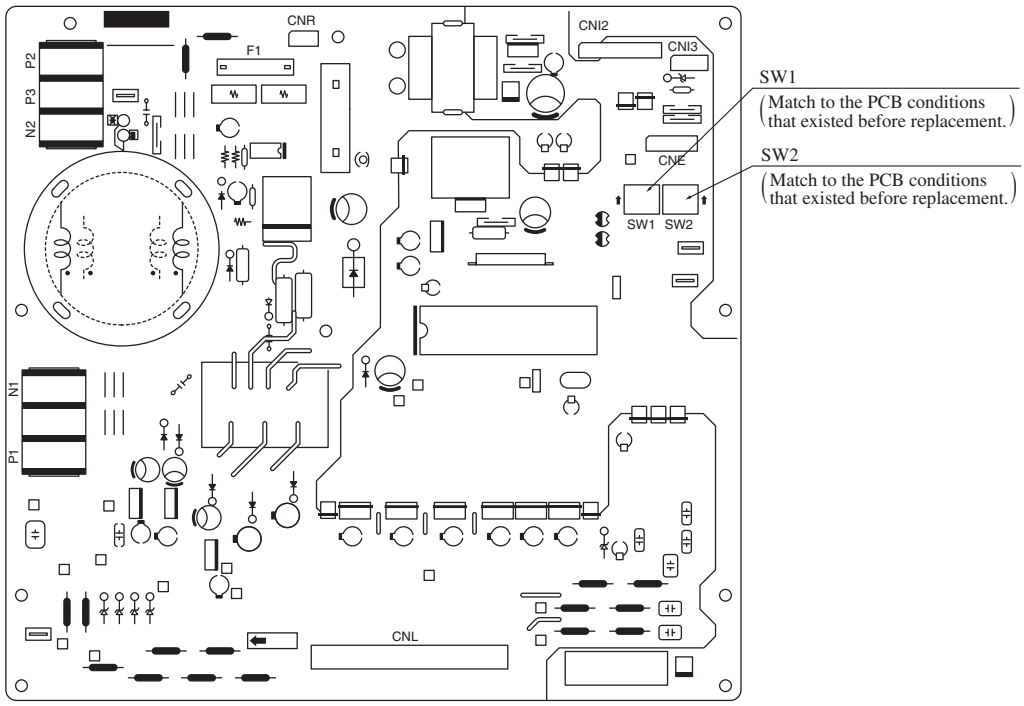
Models FDCVA402HESAR, 502HESAR, 602HESAR



Notes (1) Apply the silicone grease supplied with the component uniformly to the surface of the power transistor on the new PCB, then mount it on the PCB. If the grease is not applied, the power transistor may be damaged. Use all the silicone grease.

(2) Tighten the power transistor mounting screws of the inverter PCB, and connect the terminal block, faston terminals and connectors. After connection, make sure tightening was not forgotten and parts were not partially inserted only. In particular, make sure the power transistor is not loose by tightening the mounting screws securely. If they are not tightened, the power transistor may be damaged.

Models FDCVA802HESAR, 1002HESAR



Notes (1) Apply the silicone grease supplied with the component uniformly to the surface of the power transistor on the new PCB, then mount it on the PCB. If the grease is not applied, the power transistor may be damaged. Use all the silicone grease.

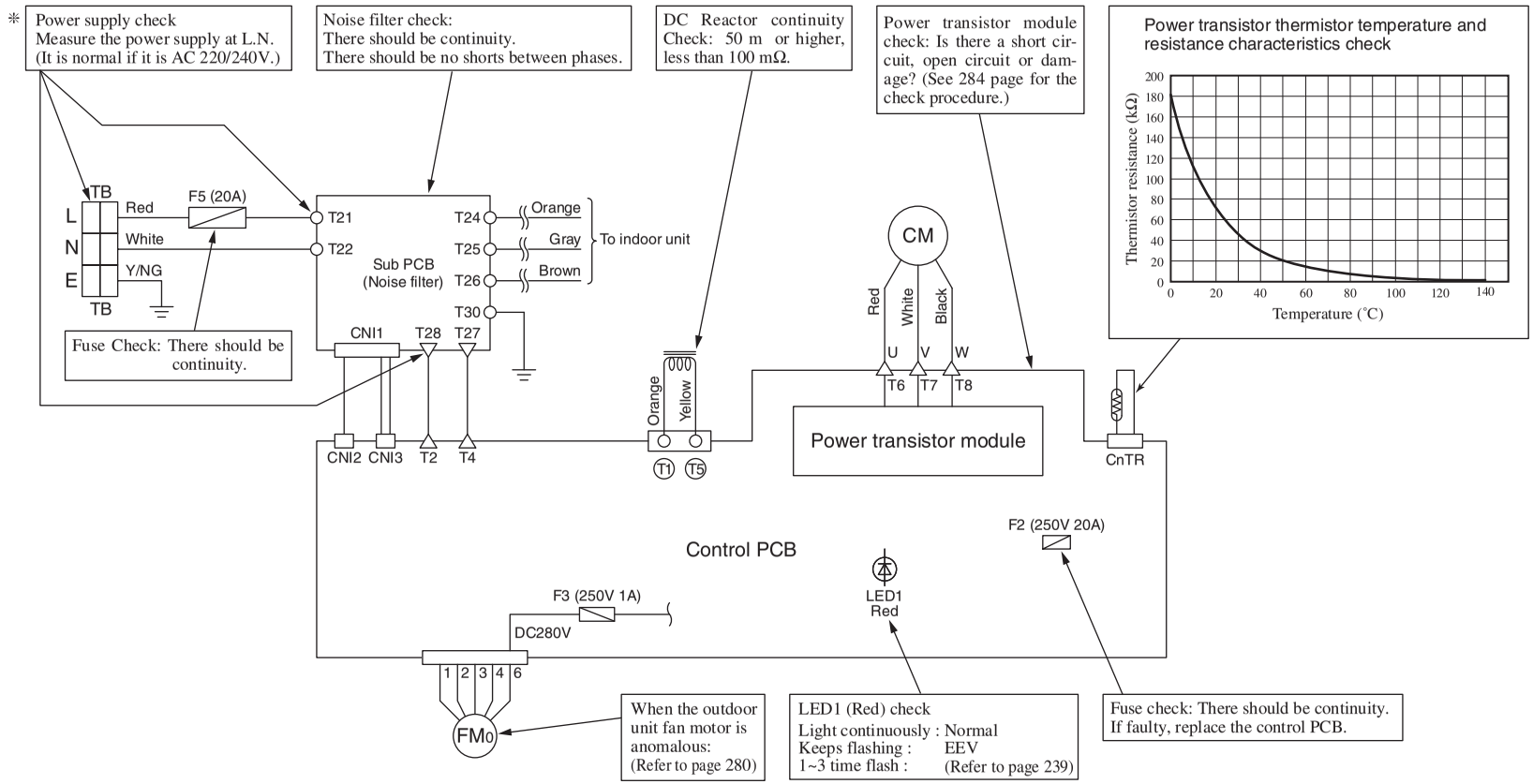
(2) Tighten the power transistor mounting screws of the inverter PCB, and connect the terminal block, faston terminals and connectors. After connection, make sure tightening was not forgotten and parts were not partially inserted only. In particular, make sure the power transistor is not loose by tightening the mounting screws securely. If they are not tightened, the power transistor may be damaged.

Outdoor Unit controller failure diagnosis circuit diagram

Models FDCVA151~251HENR

● Outdoor unit check points

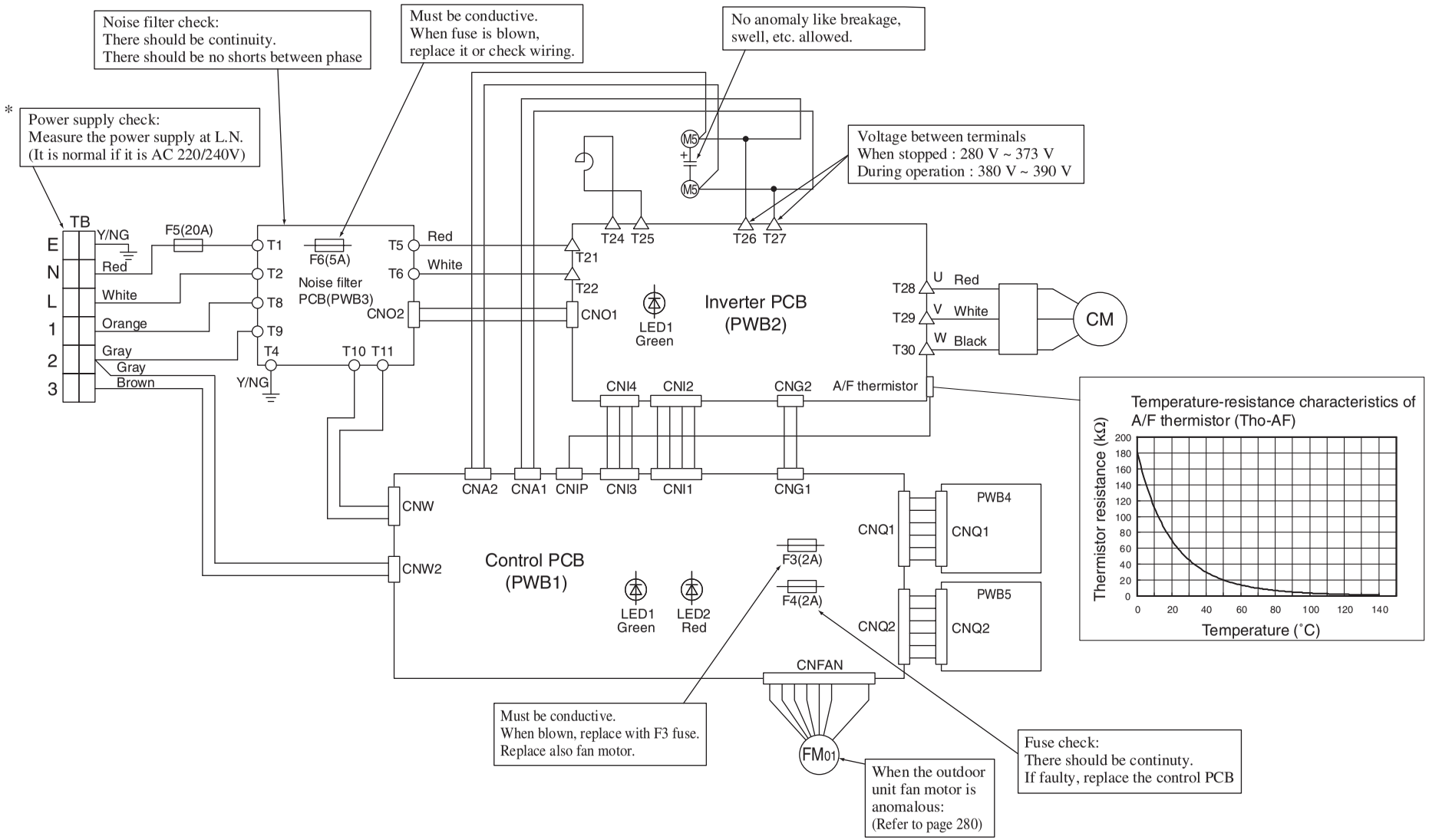
Check items with the *mark when the power is ON.



Model FDCVA302HENR

● Outdoor unit check points

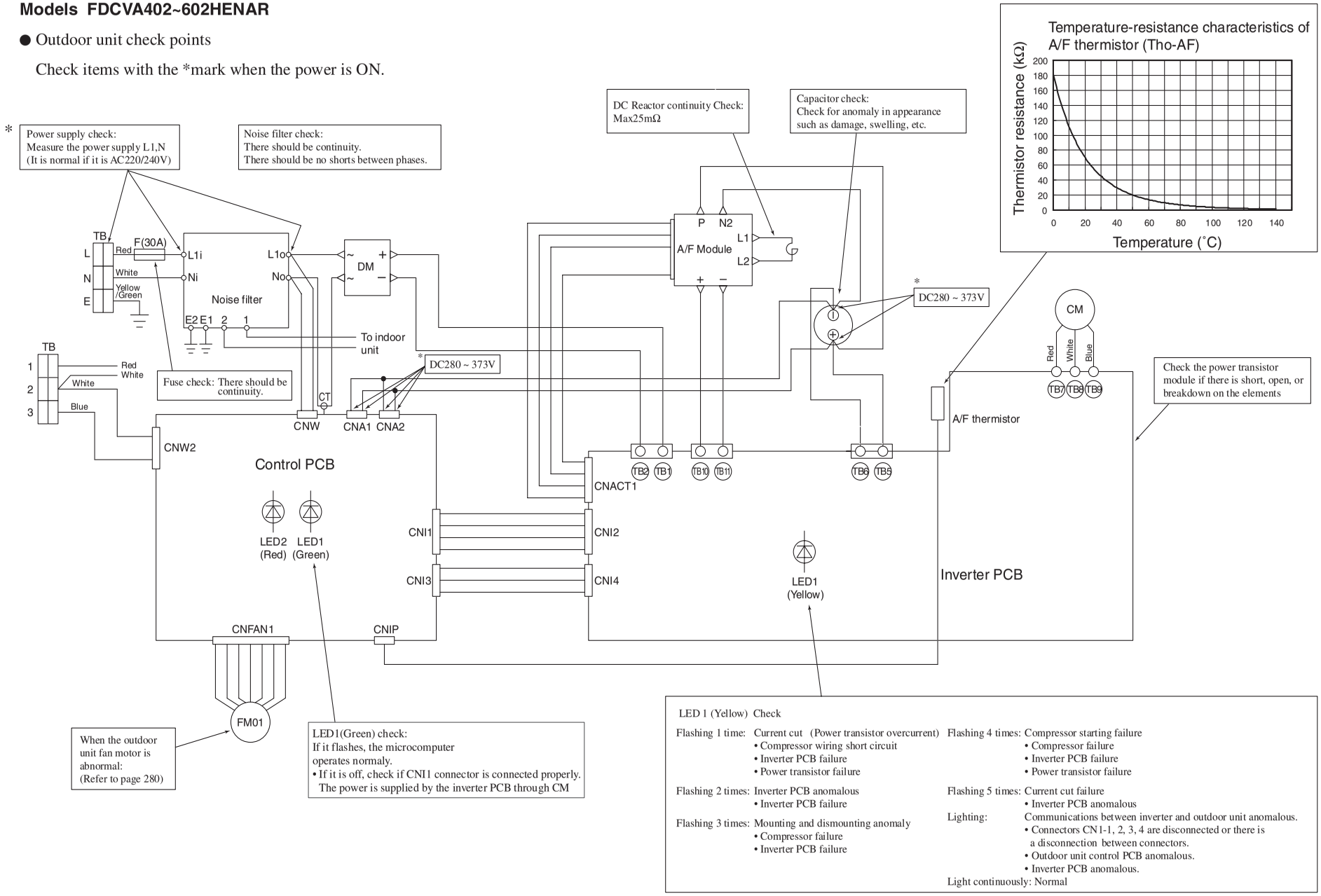
Check items with the *mark when the power is ON.



Models FDCVA402~602HENAR

● Outdoor unit check points

Check items with the *mark when the power is ON.



LED 1 (Yellow) Check

Flashing 1 time: Current cut (Power transistor overcurrent)
- Compressor wiring short circuit
- Inverter PCB failure
- Power transistor failure

Flashing 2 times: Inverter PCB anomalous
- Inverter PCB failure

Flashing 3 times: Mounting and dismounting anomaly
- Compressor failure
- Inverter PCB failure

Flashing 4 times: Compressor starting failure
- Compressor failure
- Inverter PCB failure
- Power transistor failure

Flashing 5 times: Current cut failure
- Inverter PCB anomalous

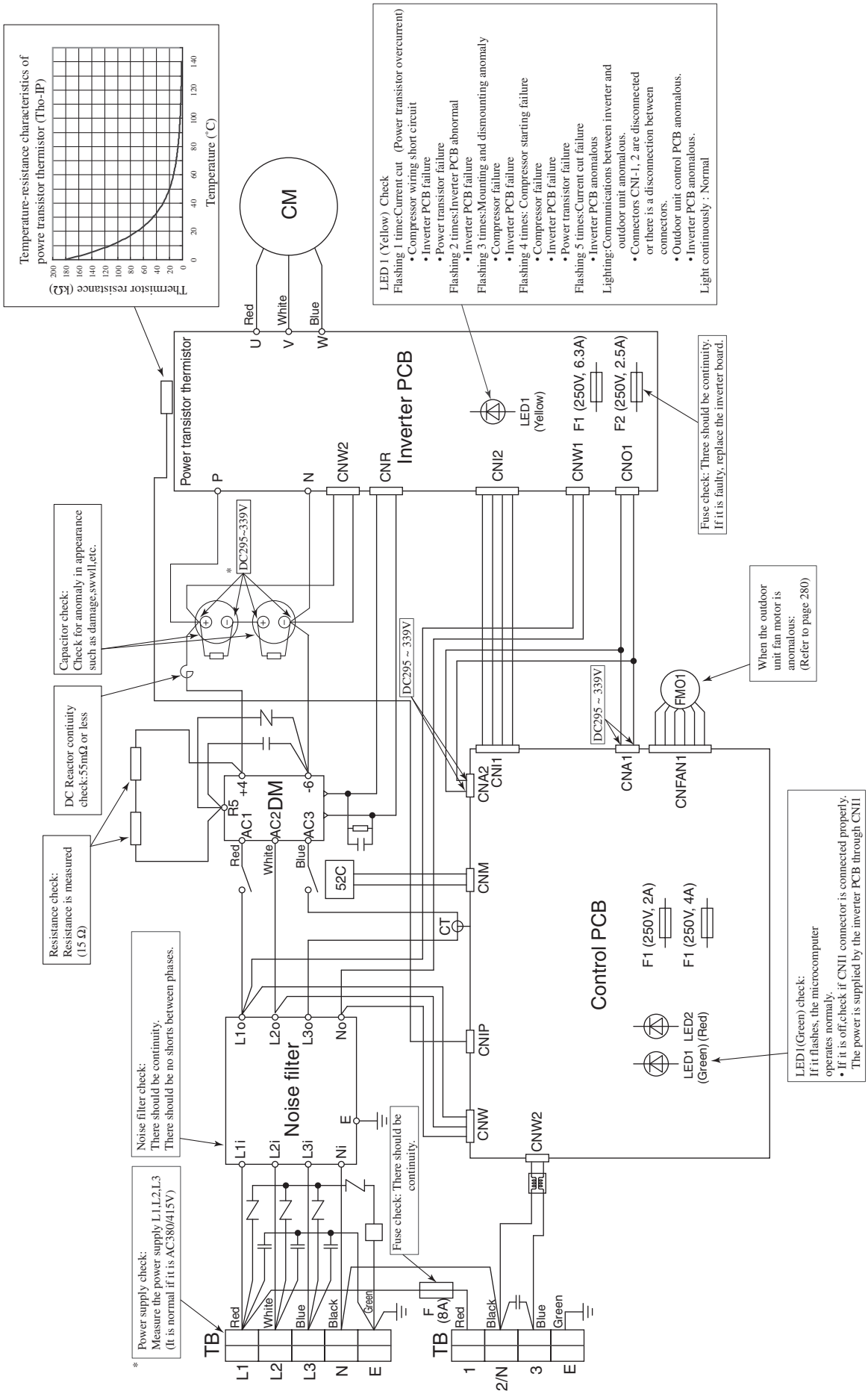
Lighting: Communications between inverter and outdoor unit anomalous.
- Connectors CN1-1, 2, 3, 4 are disconnected or there is a disconnection between connectors.
- Outdoor unit control PCB anomalous.
- Inverter PCB anomalous.

Light continuously: Normal

◆FDCVA402~602HESAR

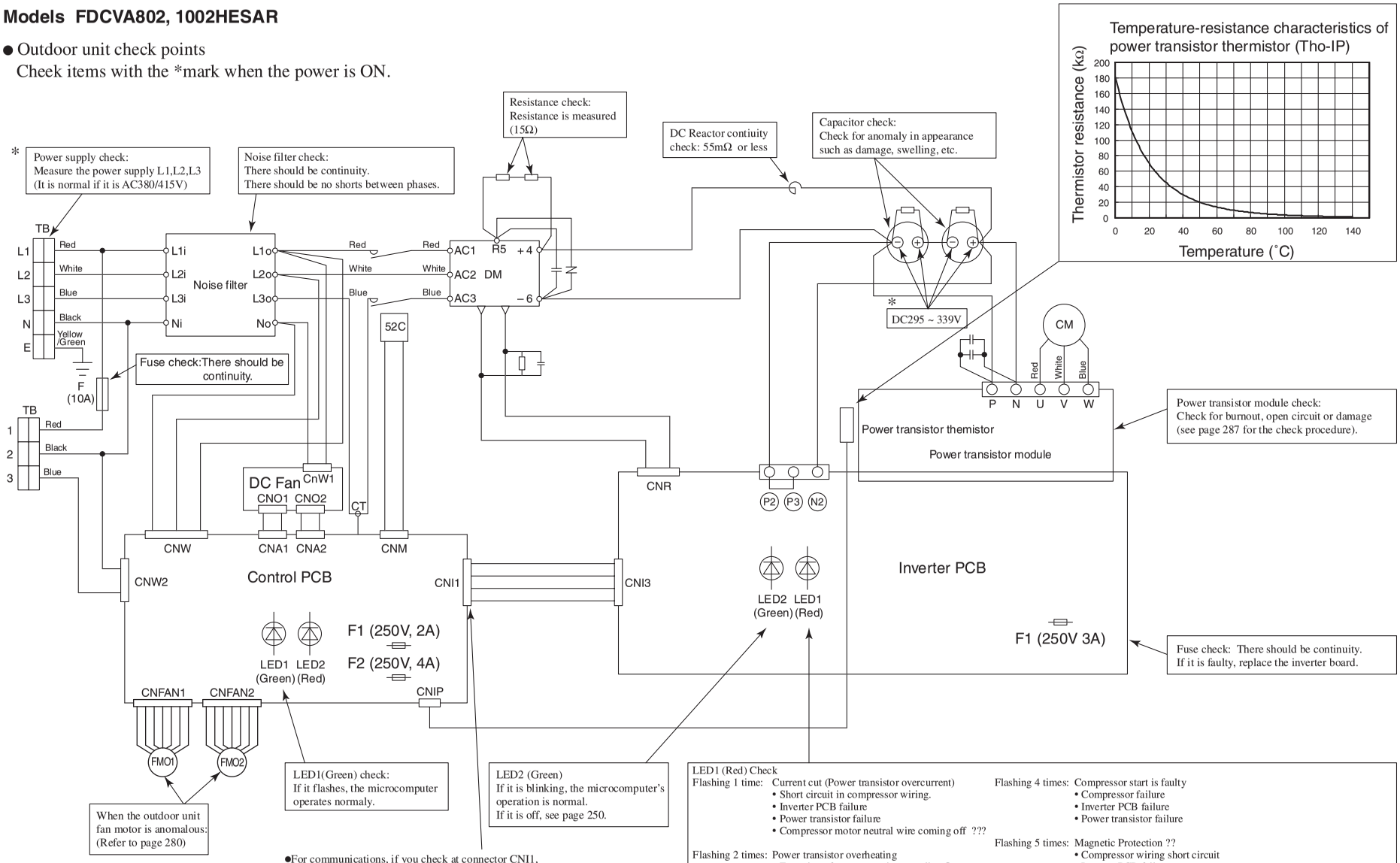
● Outdoor unit check points

Check items with the *mark when the power is ON.



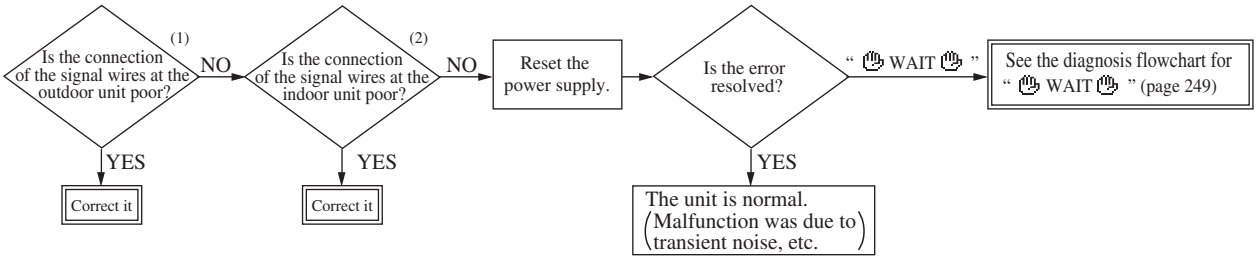
Models FDCVA802, 1002HESAR

● Outdoor unit check points
Cheek items with the *mark when the power is ON.



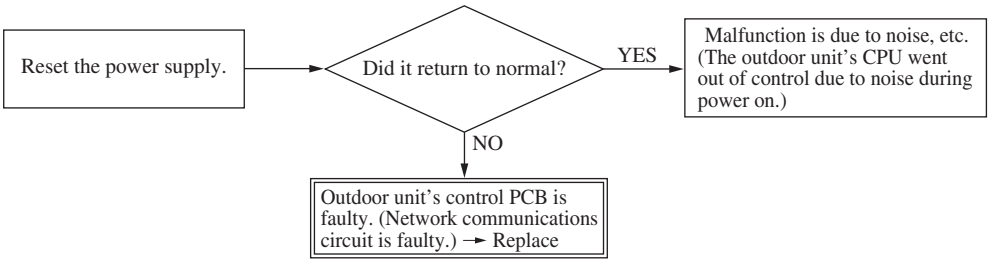
1 Error display : E5 [Communications error during operation]

Indoor unit		Outdoor unit	
Red LED	2 time flash	Red LED	2 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing


Is the connection of the signal wires at the outdoor unit poor?
(1)
NO
Is the connection of the signal wires at the indoor unit poor?
(2)
NO
Reset the power supply.
Is the error resolved?
" WAIT "
See the diagnosis flowchart for " WAIT " (page 249)
YES
Correct it
YES
Correct it
YES
The unit is normal. (Malfunction was due to transient noise, etc.)

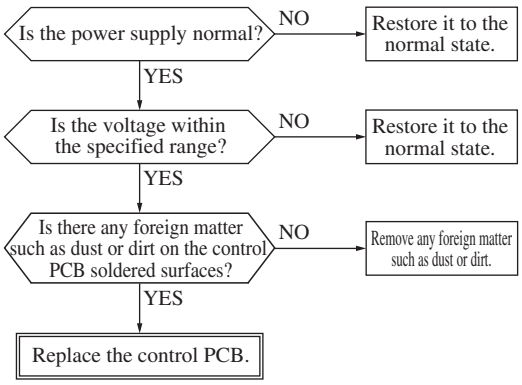
Notes (1) Check for poor connections (disconnection, looseness) on the outdoor unit's terminal block.
(2) Check for poor connections or disconnection of the signal lines between the indoor and outdoor units.

Indoor unit		Outdoor unit	
Red LED	2 time flash	Red LED	Stays OFF
Green LED	Keeps flashing	Green LED	Keeps flashing


Reset the power supply.
Did it return to normal?
YES
Malfunction is due to noise, etc. (The outdoor unit's CPU went out of control due to noise during power on.)
NO
Outdoor unit's control PCB is faulty. (Network communications circuit is faulty.) → Replace

2 Error display : E33 [Inverter primary current anomalous] [Only case of 151~251 models]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing		

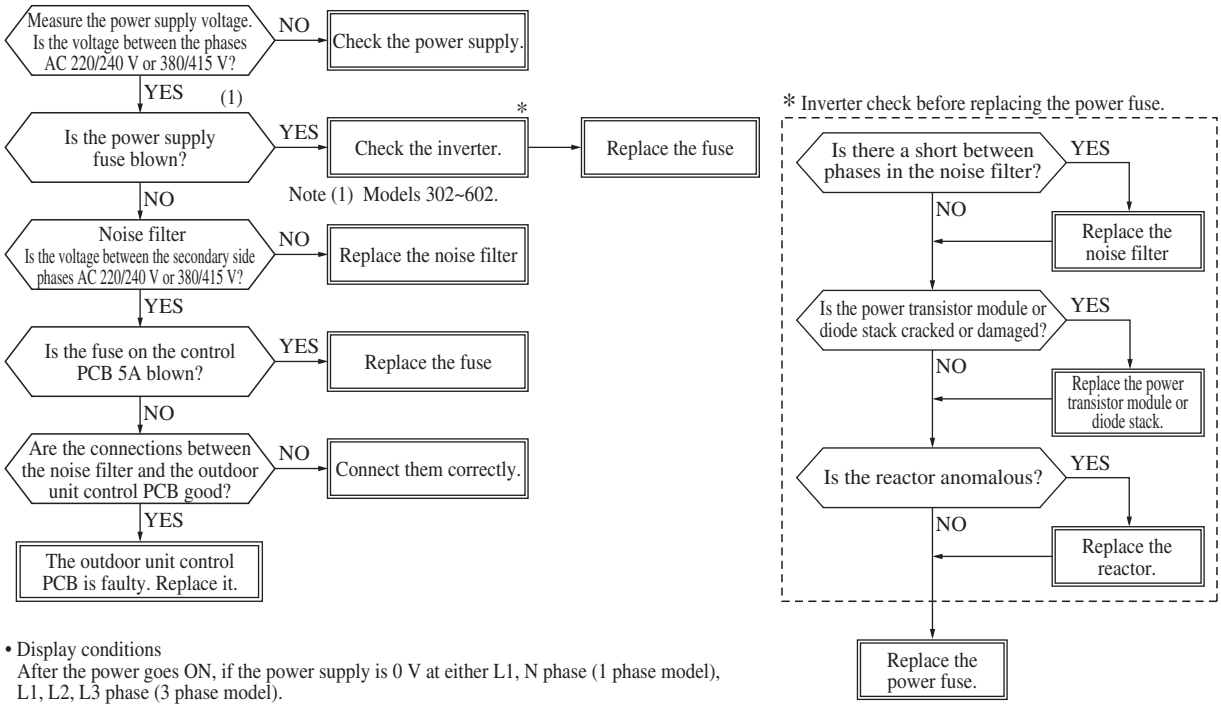

Is the power supply normal?
NO
Restore it to the normal state.
YES
Is the voltage within the specified range?
NO
Restore it to the normal state.
YES
Is there any foreign matter such as dust or dirt on the control PCB soldered surfaces?
NO
Remove any foreign matter such as dust or dirt.
YES
Replace the control PCB.

● Display conditions

If the inverter's primary current exceeds the set value for 3 seconds, the compressor stops. After a 3 minutes delay, it restarts, but when this occurs 5 times within 60 minutes.

3 Error display : E34 [Power supply open phase] [Only case of 302~1002 models]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

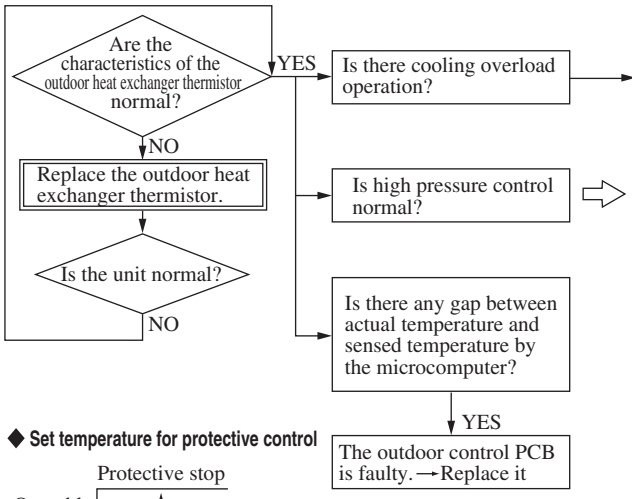

Measure the power supply voltage. Is the voltage between the phases AC 220/240 V or 380/415 V?
NO
Check the power supply.
YES
(1)
Is the power supply fuse blown?
YES
Check the inverter.
*
Replace the fuse
NO
Note (1) Models 302~602.
Noise filter Is the voltage between the secondary side phases AC 220/240 V or 380/415 V?
NO
Replace the noise filter
YES
Is the fuse on the control PCB 5A blown?
YES
Replace the fuse
NO
Are the connections between the noise filter and the outdoor unit control PCB good?
NO
Connect them correctly.
YES
The outdoor unit control PCB is faulty. Replace it.
* Inverter check before replacing the power fuse.
Is there a short between phases in the noise filter?
YES
NO
Replace the noise filter
Is the power transistor module or diode stack cracked or damaged?
YES
NO
Replace the power transistor module or diode stack.
Is the reactor anomalous?
YES
NO
Replace the reactor.
Replace the power fuse.

• Display conditions
After the power goes ON, if the power supply is 0 V at either L1, N phase (1 phase model), L1, L2, L3 phase (3 phase model).

4 Error display : E35 [Cooling overload operation]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

●Models FDCVA151~251


Are the characteristics of the outdoor heat exchanger thermistor normal?
YES
NO
Replace the outdoor heat exchanger thermistor.
Is the unit normal?
NO
Is there cooling overload operation?
Is high pressure control normal?
Is there any gap between actual temperature and sensed temperature by the microcomputer?
YES
The outdoor control PCB is faulty. → Replace it

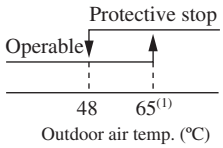
Check the unit side.

- Is there a short circuit in the outdoor unit?
- Is the installation space proper?
- Is it overcharged?
- Is the heat exchanger dirty or clogged?

(1)When the following conditions are established, compressor speed is reduced every minute down to the minimum speed at lowest.
① Outdoor heat exchanger temperature: A˚C or higher
② Outdoor air temperature: 40ºC or higher
③ The outdoor unit's fan runs at 7 speed continuously for 30 seconds or longer.
(2) Control is cancelled when the temperature drops to BºC or lower.

Model \ Item			A	B
151~251	Compressor speed (rps)	min. to control range less than 88	58.5	53.5
		88 to less than 108	53.5	48.5
		108 or higher to max.	48.5	43.5

◆ **Set temperature for protective control**



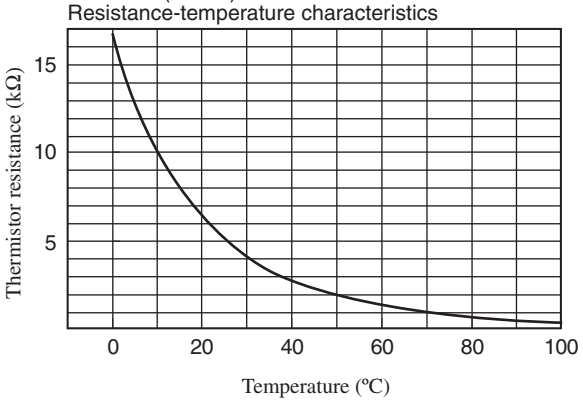
Note (1) The anomalous stop temperature differs depending on the compressor's speed.

Compressor speed (rps)	Indoor heat exchanger temprature (ºC)
min. to control range less than 88	65 or more
88 to less than 108	60 or more
108 or higher to max.	55 or more

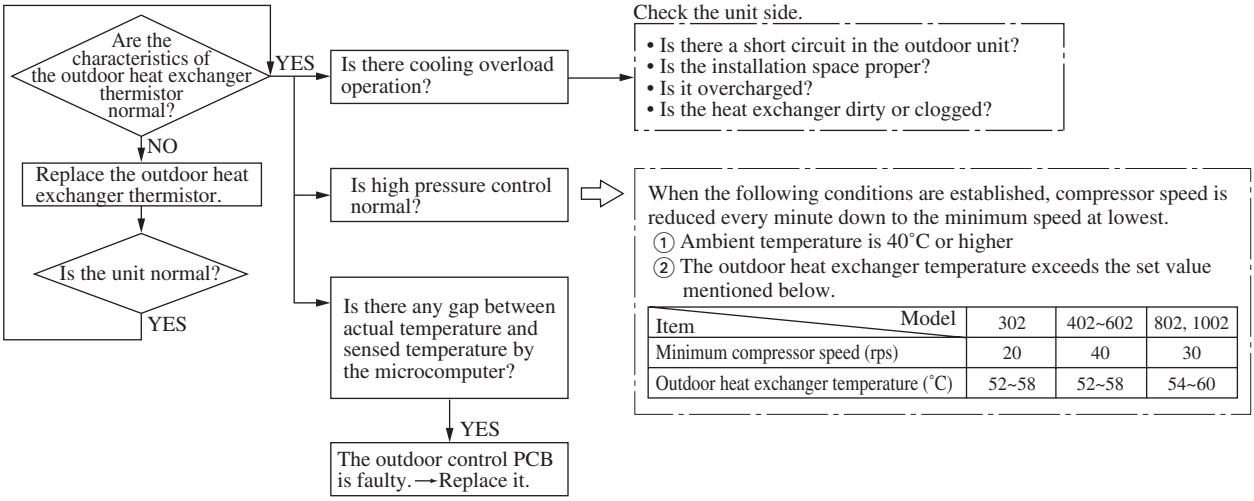
● Display conditions

The error occurs when the outdoor heat exchanger temperature exceeds 65°C 5 times within 60 minutes, or is kept 65°C or higher.

Outdoor unit heat exchanger thermistor(Tho-R)
Resistance-temperature characteristics

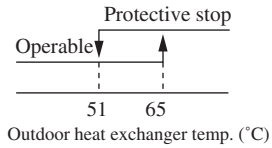


● **Models FDCVA302~1002**


Are the characteristics of the outdoor heat exchanger thermistor normal?
YES
NO
Replace the outdoor heat exchanger thermistor.
Is the unit normal?
YES
Is there cooling overload operation?
Is high pressure control normal?
Is there any gap between actual temperature and sensed temperature by the microcomputer?
YES
The outdoor control PCB is faulty. → Replace it.
Check the unit side.
• Is there a short circuit in the outdoor unit?
• Is the installation space proper?
• Is it overcharged?
• Is the heat exchanger dirty or clogged?
When the following conditions are established, compressor speed is reduced every minute down to the minimum speed at lowest.
① Ambient temperature is 40˚C or higher
② The outdoor heat exchanger temperature exceeds the set value mentioned below.

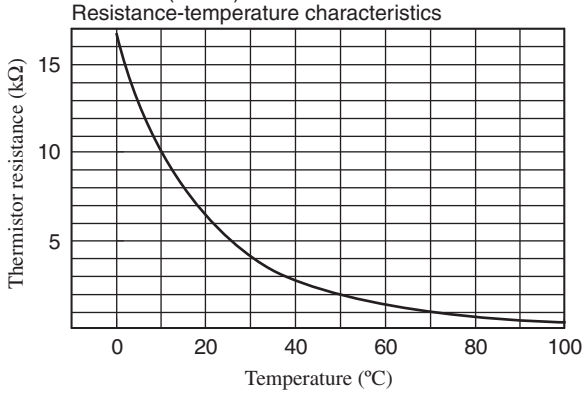
Item \ Model	302	402~602	802, 1002
Minimum compressor speed (rps)	20	40	30
Outdoor heat exchanger temperature (˚C)	52~58	52~58	54~60

◆ **Set temperature for protective control**



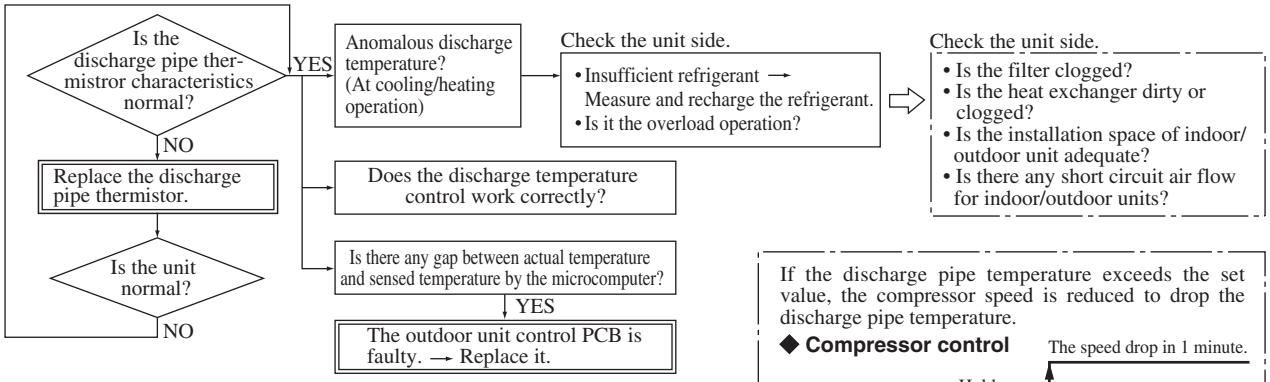
● Display Conditions
The error occurs when the outdoor heat exchanger temperature exceeds 65˚C 5 times within 60 minutes, or is kept 65˚C or higher.

Outdoor unit heat exchanger thermistor(Tho-R) Resistance-temperature characteristics



5 Error display : E36 [Discharge temperature error]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

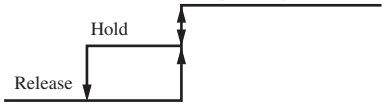

Is the discharge pipe thermistor characteristics normal?
YES
NO
Replace the discharge pipe thermistor.
Is the unit normal?
NO
Anomalous discharge temperature? (At cooling/heating operation)
Check the unit side.
• Insufficient refrigerant → Measure and recharge the refrigerant.
• Is it the overload operation?
Check the unit side.
• Is the filter clogged?
• Is the heat exchanger dirty or clogged?
• Is the installation space of indoor/outdoor unit adequate?
• Is there any short circuit air flow for indoor/outdoor units?
Does the discharge temperature control work correctly?
Is there any gap between actual temperature and sensed temperature by the microcomputer?
YES
The outdoor unit control PCB is faulty. → Replace it.

● Display conditions

The error occurs when the discharge temperature exceeds the set point shown below 2 times within 60 minutes, or continuously for 60 minutes including when the compressor is stopped.

If the discharge pipe temperature exceeds the set value, the compressor speed is reduced to drop the discharge pipe temperature.

◆ Compressor control

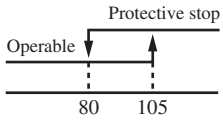


151~251 models	80	90
302~602 models	100	105
802, 1002 models	105	110

Discharge pipe temperature (˚C)

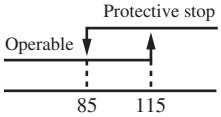
◆ Set temperature for protective control

151~251 models



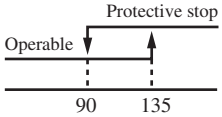
Discharge pipe temp. (˚C)

302~602 models



Discharge pipe temp. (˚C)

802, 1002 models

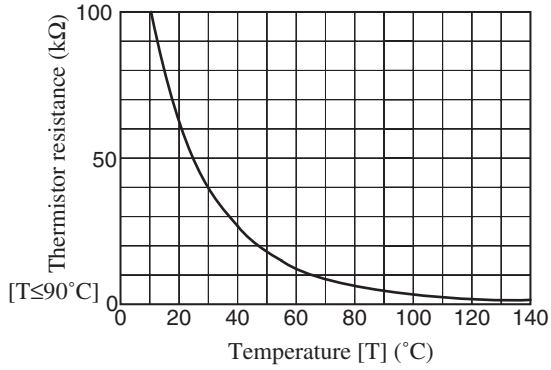


Discharge pipe temp. (˚C)

● 151~251, 302 models

Discharge pipe thermistor (Tho-D)

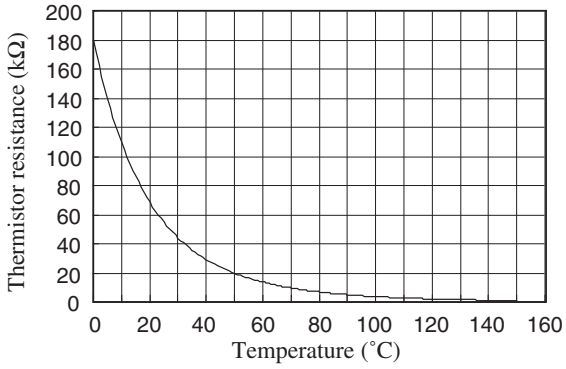
Resistance-temperature characteristics



● 402~1002 models

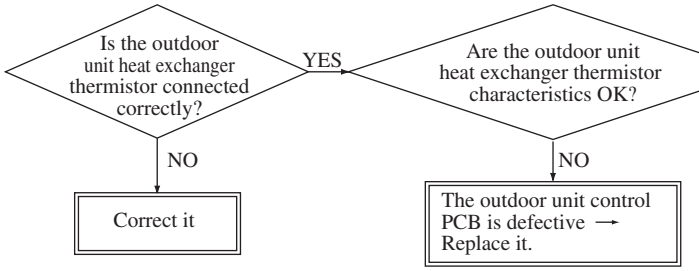
Discharge pipe thermistor (Tho-D)

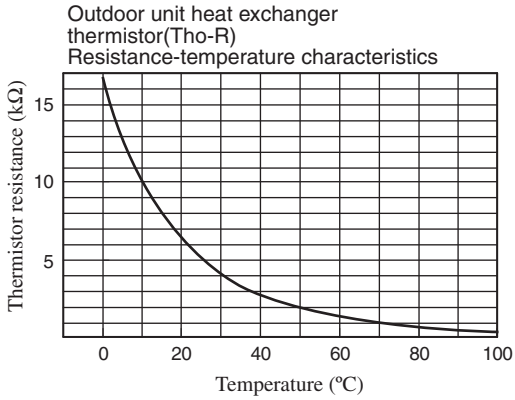
Resistance-temperature characteristics



6 Error display : E37 [Defective outdoor unit heat exchanger thermistor]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing


Is the outdoor unit heat exchanger thermistor connected correctly?
YES
Are the outdoor unit heat exchanger thermistor characteristics OK?
YES
The outdoor unit heat exchanger thermistor is defective. → Replace it.
NO
Correct it
NO
The outdoor unit control PCB is defective → Replace it.



● Display conditions

If the temperature sensed by the thermistor is –50 (–30)°C or lower continuously for 5 seconds between 2 minutes and 2 minutes 20 seconds after the compressor goes ON, the compressor stops. After a 3 minute delay, the compressor restarts.

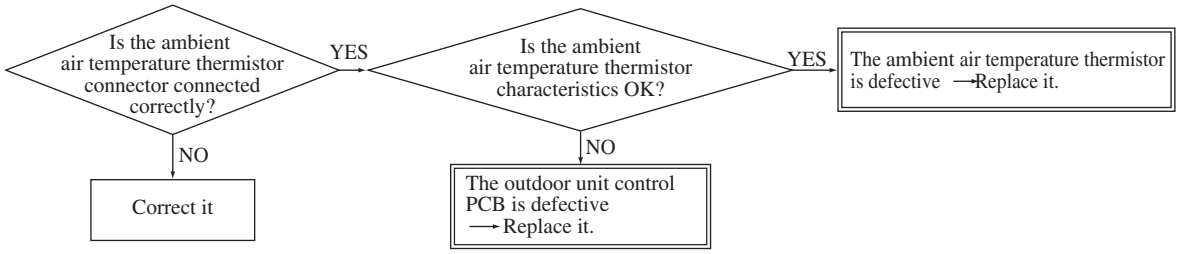
The error occurs when this state is detected 3 times in 40 minutes.

Note (1) Values in ( ) show for the case of the 151~251 models.

---

7 Error display : E38 [Defective ambient air temperature thermistor]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing


Is the ambient air temperature thermistor connector connected correctly?
YES
Is the ambient air temperature thermistor characteristics OK?
YES
The ambient air temperature thermistor is defective →Replace it.
NO
Correct it
NO
The outdoor unit control PCB is defective →Replace it.

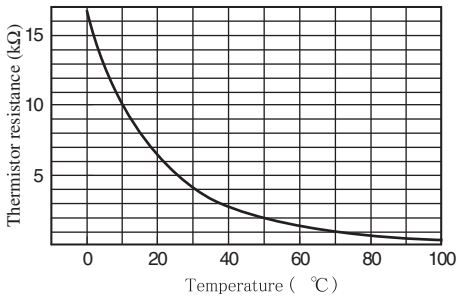
● Display conditions

If the temperature sensed by the thermistor is –30°C or lower continuously for 5 seconds between 2 minutes and 2 minutes 20 seconds after the compressor goes ON, the compressor stops. After a 3 minute delay, the compressor restarts.

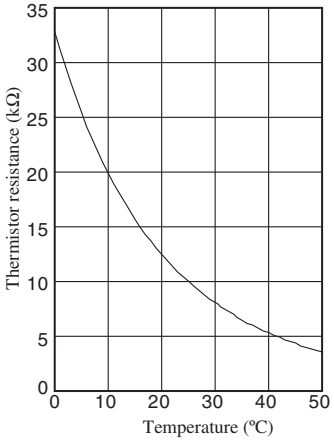
The error occurs when this state is detected 3 times in 40 minutes.

Note (1) The figure at right shows the ambient air temperature thermistor (Tho-A) (Temperature – Resistance Characteristics) for the 402 ~ 1002 models. See the figure above for the 151~251 and 302 models.

● 151~251, 302 models
Ambient air temperature thermistor (Tho-A)
Resistance temperature characteristics

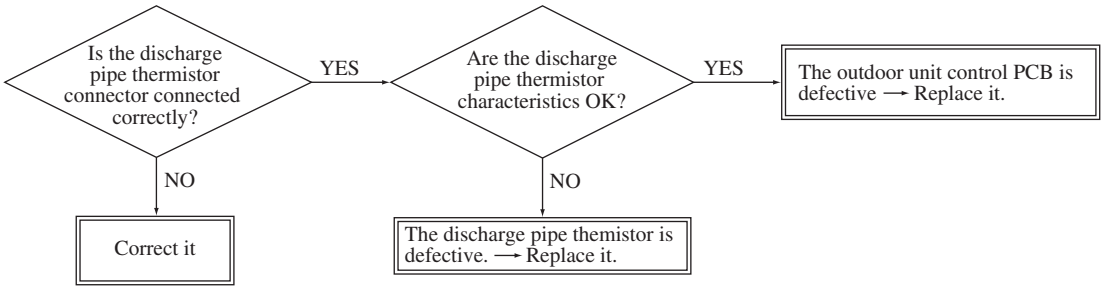


● 402~1002 models
Ambient air temperature thermistor (Tho-A)
Resistance temperature characteristics



8 Error display : E39 [Defective discharge pipe thermistor]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing


Is the discharge pipe thermistor connector connected correctly?
YES
Are the discharge pipe thermistor characteristics OK?
YES
The outdoor unit control PCB is defective ⟶ Replace it.
NO
NO
Correct it
The discharge pipe themistor is defective. ⟶ Replace it.

● Display conditions

If the temperature sensed by the thermistor is –30 (–10)ºC or lower continuously for 5 seconds between 10 minutes and 10 minutes 20 seconds after the compressor goes ON, the compressor stops. After a 3 minutes delay, the compressor restarts.

The error occurs when this state is detected 3 times in 40 minutes.

Note (1) Values in ( ) show for the case of the 151~251 models.

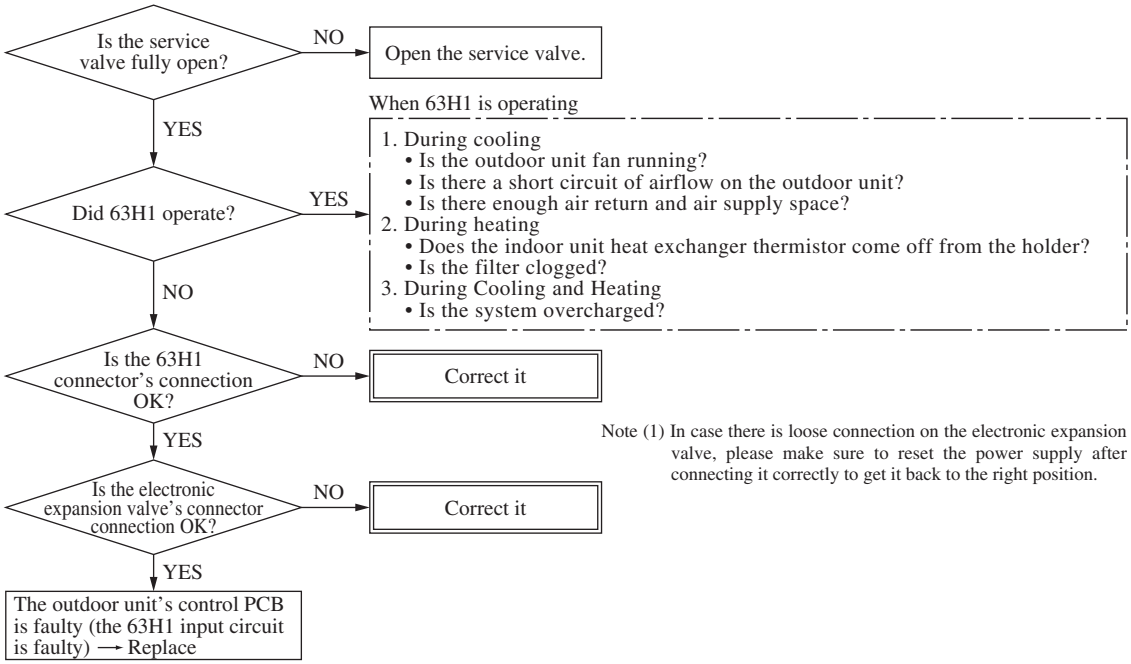
Note) See Page 274 for the characteristic value of discharge pipe temperature thermistor.

---

9 Error display : E40 [63H1 operation] [Only case of 302~1002 models]

If the power supply breaker is turned OFF and ON again in a short period, it may cause to generate E 40. Please make sure to wait more than 1 minute to turn ON the power supply again.

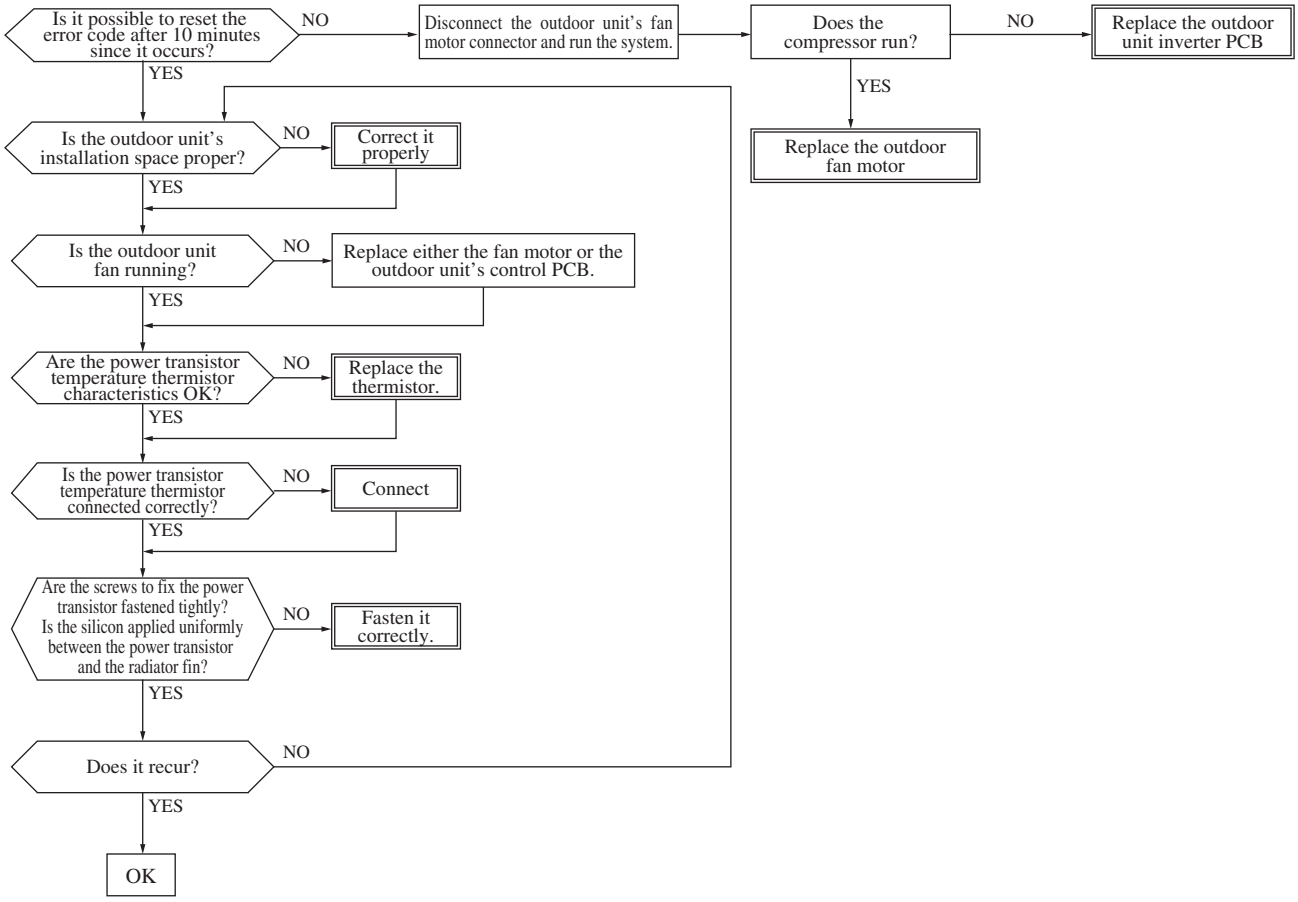
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing


Is the service valve fully open?
NO
Open the service valve.
YES
When 63H1 is operating
1. During cooling
• Is the outdoor unit fan running?
• Is there a short circuit of airflow on the outdoor unit?
• Is there enough air return and air supply space?
2. During heating
• Does the indoor unit heat exchanger thermistor come off from the holder?
• Is the filter clogged?
3. During Cooling and Heating
• Is the system overcharged?
Did 63H1 operate?
YES
NO
Is the 63H1 connector's connection OK?
NO
Correct it
YES
Is the electronic expansion valve's connector connection OK?
NO
Correct it
YES
The outdoor unit's control PCB is faulty (the 63H1 input circuit is faulty) ⟶ Replace

Note (1) In case there is loose connection on the electronic expansion valve, please make sure to reset the power supply after connecting it correctly to get it back to the right position.

10 Error display : E41 [Power transistor is overheating] [Only case of 402~1002 models]

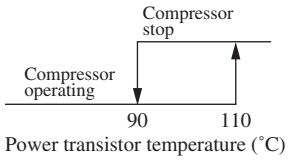
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing


Is it possible to reset the error code after 10 minutes since it occurs?
NO
Disconnect the outdoor unit's fan motor connector and run the system.
Does the compressor run?
NO
Replace the outdoor unit inverter PCB
YES
Replace the outdoor fan motor
YES
Is the outdoor unit's installation space proper?
NO
Correct it properly
YES
Is the outdoor unit fan running?
NO
Replace either the fan motor or the outdoor unit's control PCB.
YES
Are the power transistor temperature thermistor characteristics OK?
NO
Replace the thermistor.
YES
Is the power transistor temperature thermistor connected correctly?
NO
Connect
YES
Are the screws to fix the power transistor fastened tightly? Is the silicon applied uniformly between the power transistor and the radiator fin?
NO
Fasten it correctly.
YES
Does it recur?
NO
YES
OK

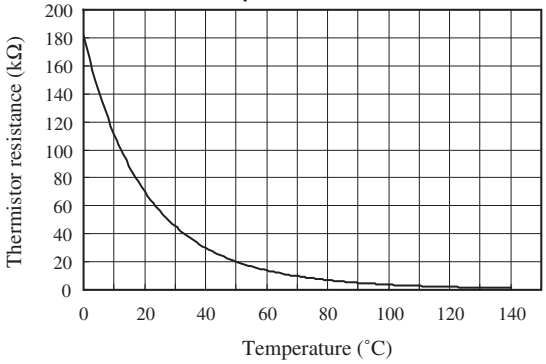
• Display conditions

If the power transistor temperature exceeds the set point, the compressor stops. And when the temperature drops to 90˚C, the compressor restarts automatically.
The error occurs when the situation above happens 5 times within 60 minutes.

• Set temperature for protective control



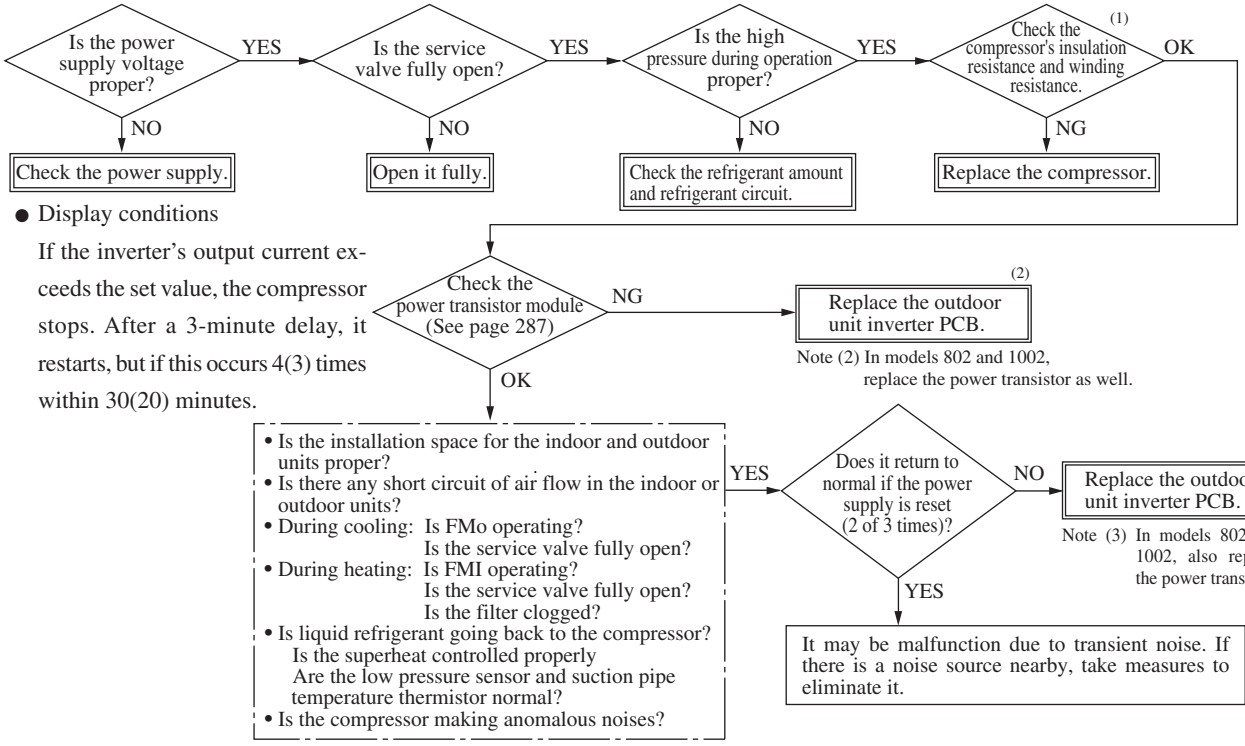
Power transistor temperature thermistor Resistance-temperature characteristics



11 Error display : E42 [Current cut]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

Note (1) 0.4 low moro at 25°C.


Is the power supply voltage proper?
YES
Is the service valve fully open?
YES
Is the high pressure during operation proper?
YES
(1)
Check the compressor's insulation resistance and winding resistance.
OK
NO
NO
NO
NG
Check the power supply.
Open it fully.
Check the refrigerant amount and refrigerant circuit.
Replace the compressor.
Check the power transistor module (See page 287)
NG
(2)
Replace the outdoor unit inverter PCB.
OK
• Is the installation space for the indoor and outdoor units proper?
• Is there any short circuit of air flow in the indoor or outdoor units?
• During cooling: Is FMo operating?
Is the service valve fully open?
• During heating: Is FMI operating?
Is the service valve fully open?
Is the filter clogged?
• Is liquid refrigerant going back to the compressor?
Is the superheat controlled properly
Are the low pressure sensor and suction pipe temperature thermistor normal?
• Is the compressor making anomalous noises?
YES
Does it return to normal if the power supply is reset (2 of 3 times)?
NO
(3)
Replace the outdoor unit inverter PCB.
YES
It may be malfunction due to transient noise. If there is a noise source nearby, take measures to eliminate it.

● Display conditions

If the inverter's output current exceeds the set value, the compressor stops. After a 3-minute delay, it restarts, but if this occurs 4(3) times within 30(20) minutes.

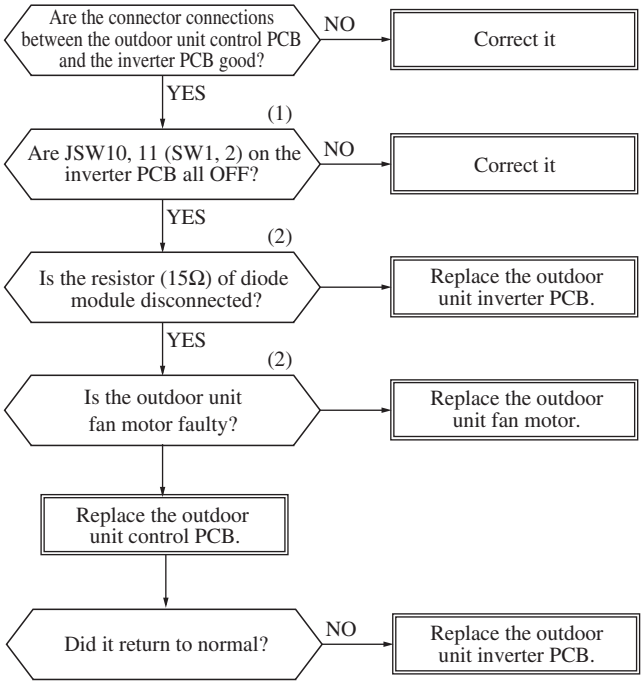
Note (2) In models 802 and 1002, replace the power transistor as well.

Note (3) In models 802 and 1002, also replace the power transistor.

Note (1) Values in ( ) show for the case of the 151~251 models.

12 Error display : E45 [Inverter communications are anomalous] [Only case of 302~1002 models]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing


Are the connector connections between the outdoor unit control PCB and the inverter PCB good?
NO
Correct it
YES
(1)
Are JSW10, 11 (SW1, 2) on the inverter PCB all OFF?
NO
Correct it
YES
(2)
Is the resistor (15Ω) of diode module disconnected?
Replace the outdoor unit inverter PCB.
YES
(2)
Is the outdoor unit fan motor faulty?
Replace the outdoor unit fan motor.
Replace the outdoor unit control PCB.
Did it return to normal?
NO
Replace the outdoor unit inverter PCB.

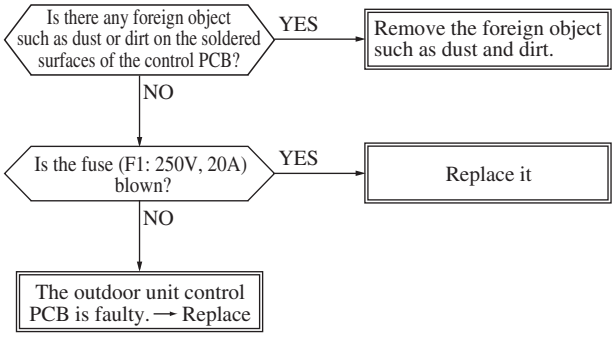
Note (1) Values in ( ) show for the case of the 802, 1002 models.

(2) Only case of 802,1002 models.

13 Error display : E47 [Only case of 151 ~ 251, 302 models]

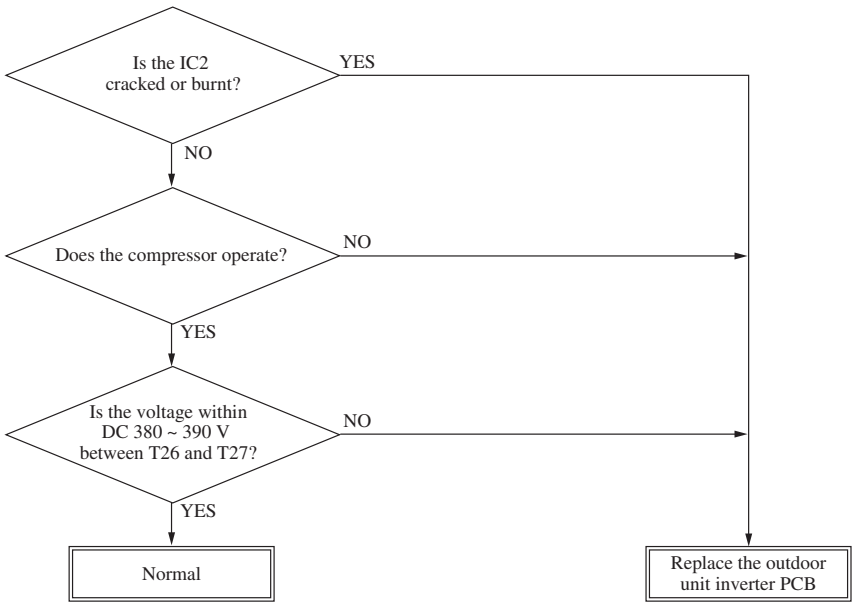
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

• Models FDCVA151 ~ 251 [Inverter over-voltage trouble]


Is there any foreign object such as dust or dirt on the soldered surfaces of the control PCB?
YES
Remove the foreign object such as dust and dirt.
NO
Is the fuse (F1: 250V, 20A) blown?
YES
Replace it
NO
The outdoor unit control PCB is faulty. → Replace

- Display conditions
  If the inverter voltage exceeds 340V, (3 times in 20 minutes), this error is displayed. After 3 minutes passes, it can be reset using the remote controller.

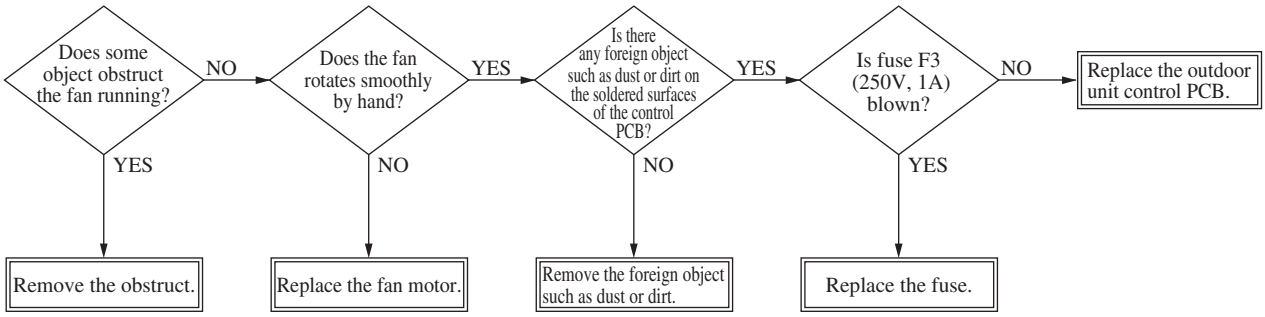
• Model FDCVA302 [Over-current error on A/F (active filter) module]



14 Error display : E48 [DC Fan motor failure]

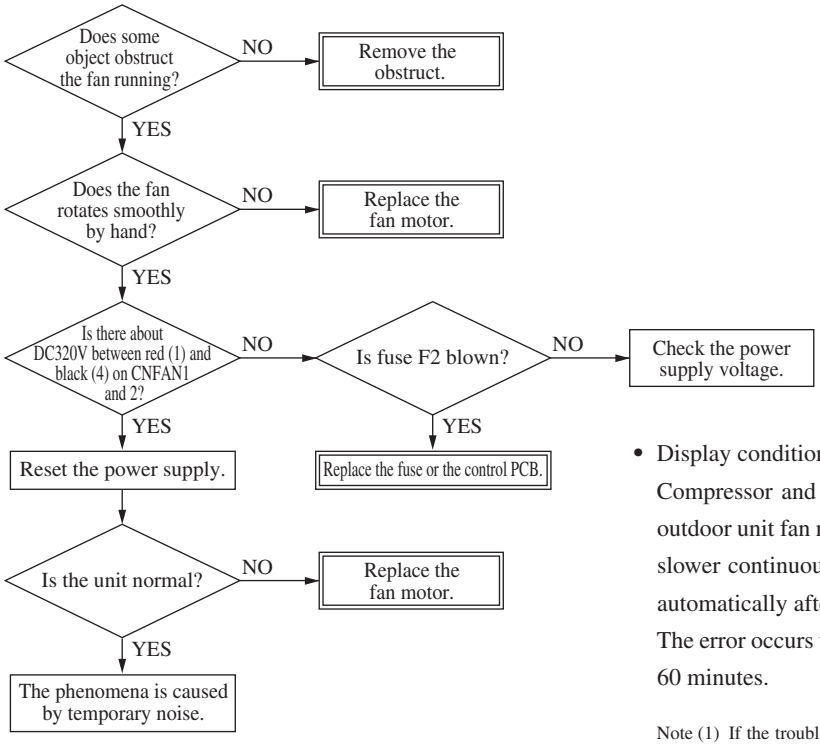
Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

• Models FDCVA151~251


Does some object obstruct the fan running?
NO
Does the fan rotates smoothly by hand?
YES
Is there any foreign object such as dust or dirt on the soldered surfaces of the control PCB?
YES
Is fuse F3 (250V, 1A) blown?
NO
Replace the outdoor unit control PCB.
YES
NO
NO
YES
Remove the obstruct.
Replace the fan motor.
Remove the foreign object such as dust or dirt.
Replace the fuse.

- Display conditions
  Compressor and the fan motor will be stopped when the outdoor unit fan motor is running at 75 min^{-1} or slower continuously for 30 seconds. And they will restart automatically after 3-minute delay.
  The error occurs when the situation happens 5 time within 60 minutes.

• Models FDCVA302~1002



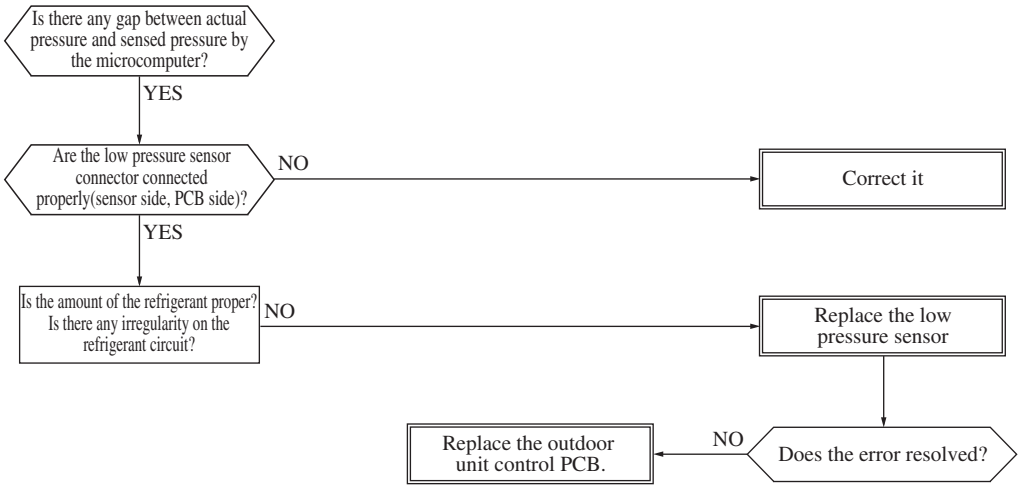
- Display conditions
  Compressor and the fan motor will be stopped when the outdoor unit fan motor (FMo1,2) is running at 100 min^{-1} or slower continuously for 30 seconds. And they will restart automatically after 3-minute delay.
  The error occurs when the situation happens 5 times within 60 minutes.

Note (1) If the trouble persists even the fan motor is replaced, replace the fan motor and the control PCB.

15 Error display : E49 [Anomalous low pressure or low pressure sensor disconnection.]

[Only case of 302 ~ 1002 models]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

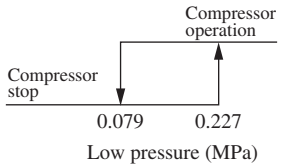

Is there any gap between actual pressure and sensed pressure by the microcomputer?
YES
Are the low pressure sensor connector connected properly(sensor side, PCB side)?
NO
Correct it
YES
Is the amount of the refrigerant proper? Is there any irregularity on the refrigerant circuit?
NO
Replace the low pressure sensor
Does the error resolved?
NO
Replace the outdoor unit control PCB.

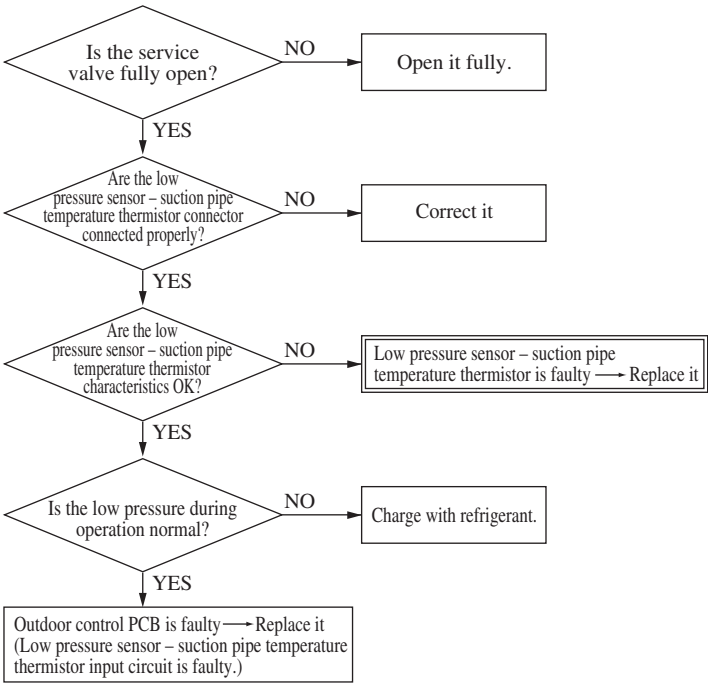
- Display Conditions

  The compressor is stopped when the low pressure becomes 0.079 MPa or lower for 15 seconds continuously, or when it becomes 0.15 MPa or lower and the superheat becomes 30K or bigger for 1 minute. The compressor will restart automatically after 3-minute delay.

  The error occurs when the situation happens 3 times within 60 minutes, or the low pressure stays 0.079 MPa or lower for 5 minutes continuously.

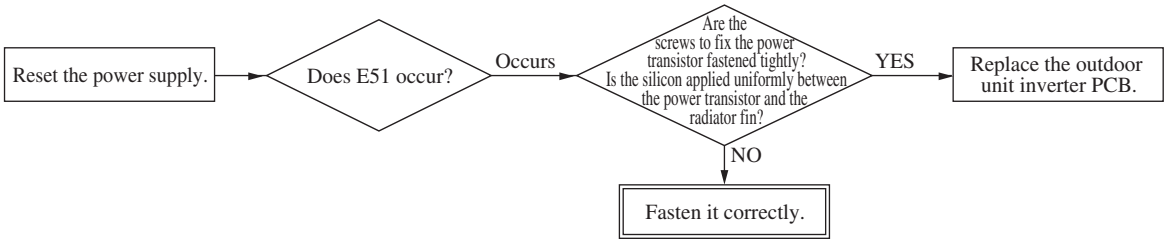
- **Set low pressure for protective control**




Is the service valve fully open?
NO
Open it fully.
YES
Are the low pressure sensor – suction pipe temperature thermistor connector connected properly?
NO
Correct it
YES
Are the low pressure sensor – suction pipe temperature thermistor characteristics OK?
NO
Low pressure sensor – suction pipe temperature thermistor is faulty ⟶ Replace it
YES
Is the low pressure during operation normal?
NO
Charge with refrigerant.
YES
Outdoor control PCB is faulty ⟶ Replace it (Low pressure sensor – suction pipe temperature thermistor input circuit is faulty.)

16 Error display : E51 [Inverter, fan motor fault] [Only case of 302 ~ 1002 models]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	Lights contiously
Green LED	Keeps flashing	Green LED	Keeps flashing

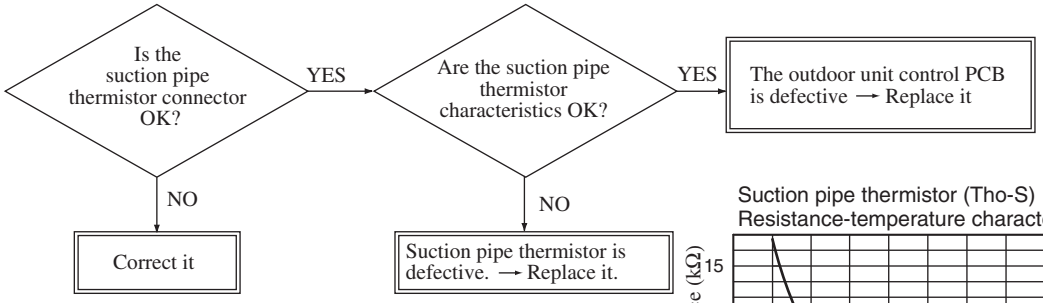

Reset the power supply.
Does E51 occur?
Occurs
Are the screws to fix the power transistor fastened tightly? Is the silicon applied uniformly between the power transistor and the radiator fin?
YES
Replace the outdoor unit inverter PCB.
NO
Fasten it correctly.

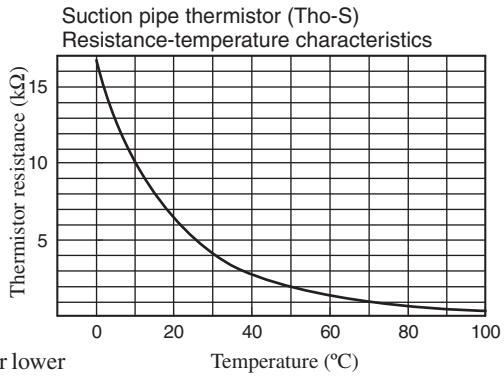
- Display conditions
  When the power transistor temperature is 110°C or higher continuously for 15 minutes.

---

17 Error display : E53 [Defective suction pipe temperature thermistor] [Only case of 302 ~ 1002 models]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

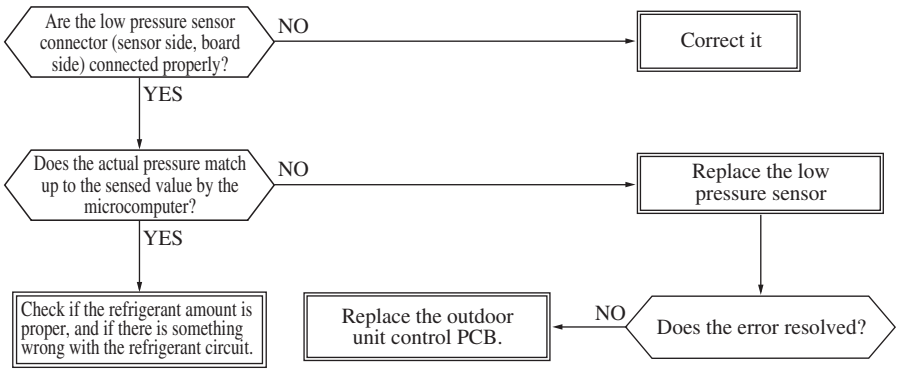

Is the suction pipe thermistor connector OK?
YES
Are the suction pipe thermistor characteristics OK?
YES
The outdoor unit control PCB is defective → Replace it
NO
Correct it
NO
Suction pipe thermistor is defective. → Replace it.



- Display conditions
  The compressor stops when the suction pipe thermistor detects -50°C or lower for 5 seconds continuously between 10 minutes and 10 minutes 20 seconds after the compressor starts. And it will restart automatically after 3-minute delay. The error occurs when the condition happens 3 times within 40 minutes.

18 Error display : E54 [Low pressure sensor fault] [Only case of 302~1002 models]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing


Are the low pressure sensor connector (sensor side, board side) connected properly?
NO
Correct it
YES
Does the actual pressure match up to the sensed value by the microcomputer?
NO
Replace the low pressure sensor
YES
Check if the refrigerant amount is proper, and if there is something wrong with the refrigerant circuit.
Replace the outdoor unit control PCB.
NO
Does the error resolved?

Note (1) See page 289 concerning the operation data display method in the remote controller.

- Display Conditions

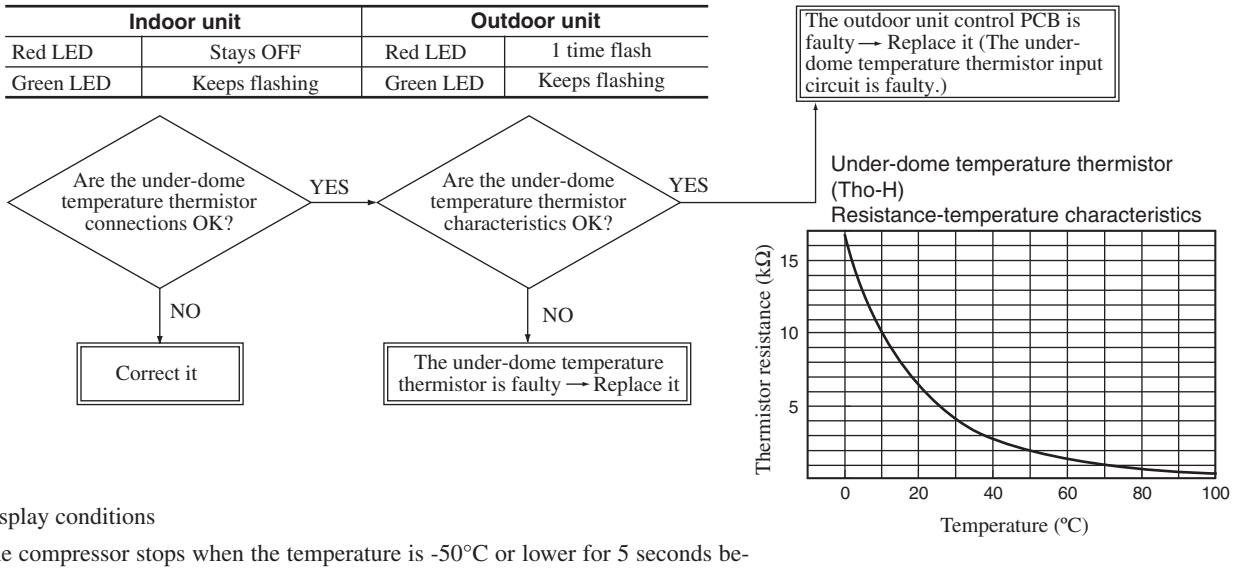
  The compressor stops when the voltage from the low pressure senor is detected lower than 0V or higher than 3.49V for 5 seconds between 2 minutes and 2 minutes 20 seconds after compressor starts. And it will restart automatically after 3-minute delay.

  The error occurs when the condition happens 3 times within 40 minutes.

---

19 Error display : E55 [Under-dome temperature thermistor fault] [Only case of 802, 1002 models]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing



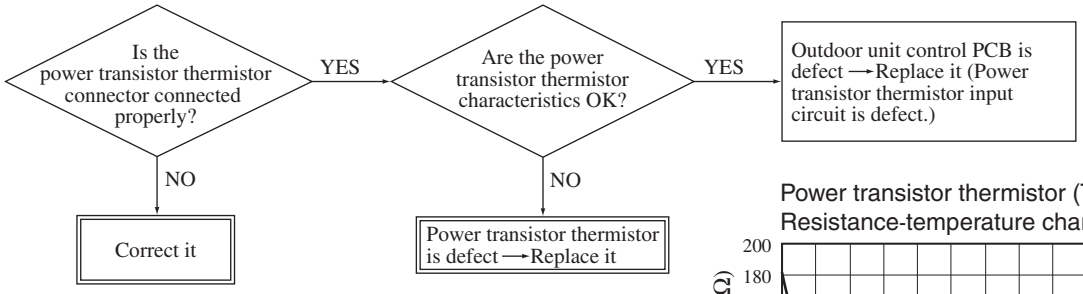
- Display conditions

  The compressor stops when the temperature is -50°C or lower for 5 seconds between 10 minutes and 10 minutes 20 seconds after the compressor starts. And it will restart automatically after 3-minute delay.

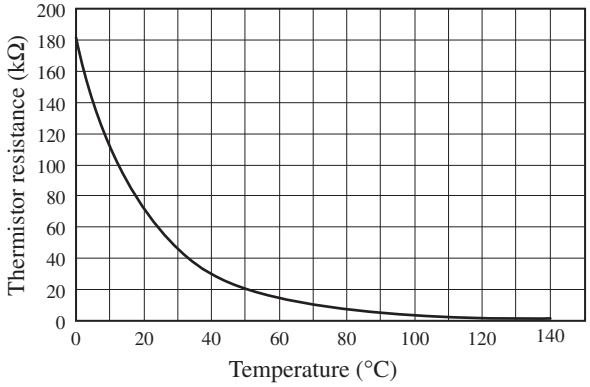
  The error occurs when the condition happens 3 times within 40 minutes.

20 Error display : E56 [Power transistor thermistor fault] [Only case of 151~251 models]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing		


Is the power transistor thermistor connector connected properly?
YES
Are the power transistor thermistor characteristics OK?
YES
Outdoor unit control PCB is defect → Replace it (Power transistor thermistor input circuit is defect.)
NO
Correct it
NO
Power transistor thermistor is defect → Replace it

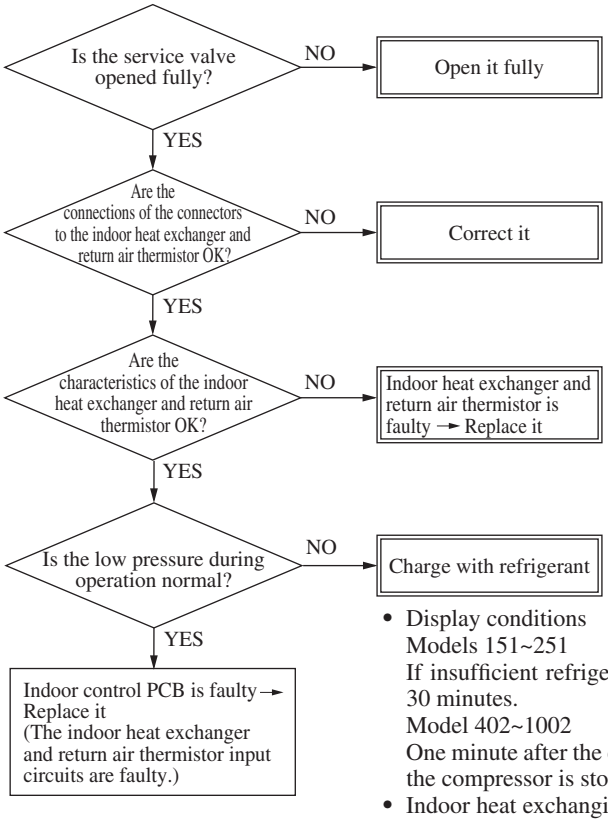
Power transistor thermistor (Tho-IPM)
Resistance-temperature characteristics



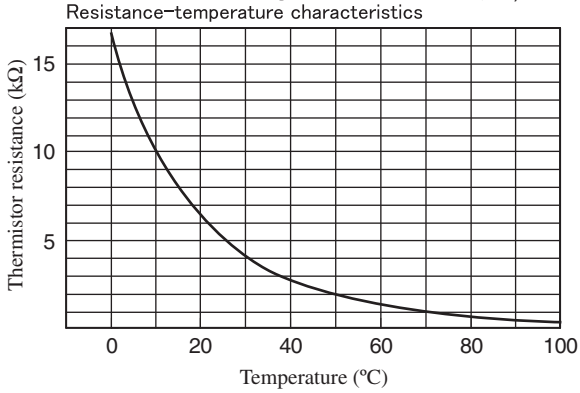
- Display conditions
  The compressor stops when the temperature is -10°C or lower for 5 seconds between 10 minutes and 10 minutes 20 seconds after the compressor starts. And it will restart automatically after 3-minute delay.
  The error occurs when the condtion happens 3 times within 40 minutes.

21 Error display : E57 [Insufficient refrigerant amount] [Only case of 151~251, 402~1002 models]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing	Green LED	


Is the service valve opened fully?
NO
Open it fully
YES
Are the connections of the connectors to the indoor heat exchanger and return air thermistor OK?
NO
Correct it
YES
Are the characteristics of the indoor heat exchanger and return air thermistor OK?
NO
Indoor heat exchanger and return air thermistor is faulty → Replace it
YES
Is the low pressure during operation normal?
NO
Charge with refrigerant
YES
Indoor control PCB is faulty → Replace it
(The indoor heat exchanger and return air thermistor input circuits are faulty.)

Return air thermistor (THI-A)
Indoor unit heat exchanger thermistor (THI-R1,R2)
Resistance-temperature characteristics

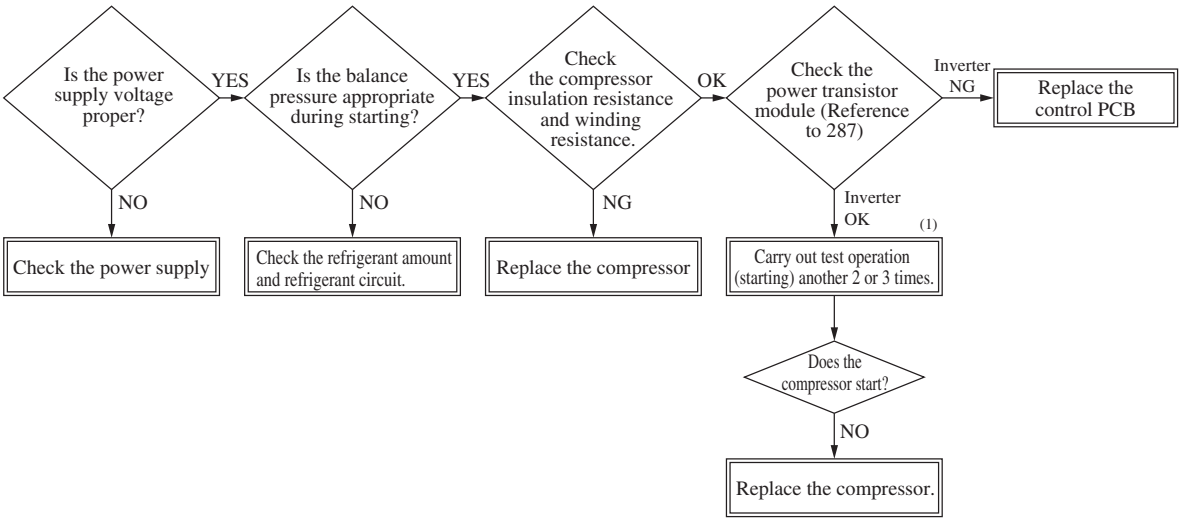


- Display conditions
  Models 151~251
  If insufficient refrigerant protection (See page 171) is implemented 3 times within 30 minutes.
  Model 402~1002
  One minute after the compressor is started, the following conditions are detected and the compressor is stopped.
- Indoor heat exchanging temperature (THI-R) – Indoor inlet air temperature (THI-A) > – 4°C, and the status lasts for 1 minute or more.

22 Error display : E59 [Anomaly in compressor starting]

• Models FDCVA151~251

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time, 2 time, 3 time flash
Green LED	Keeps flashing		



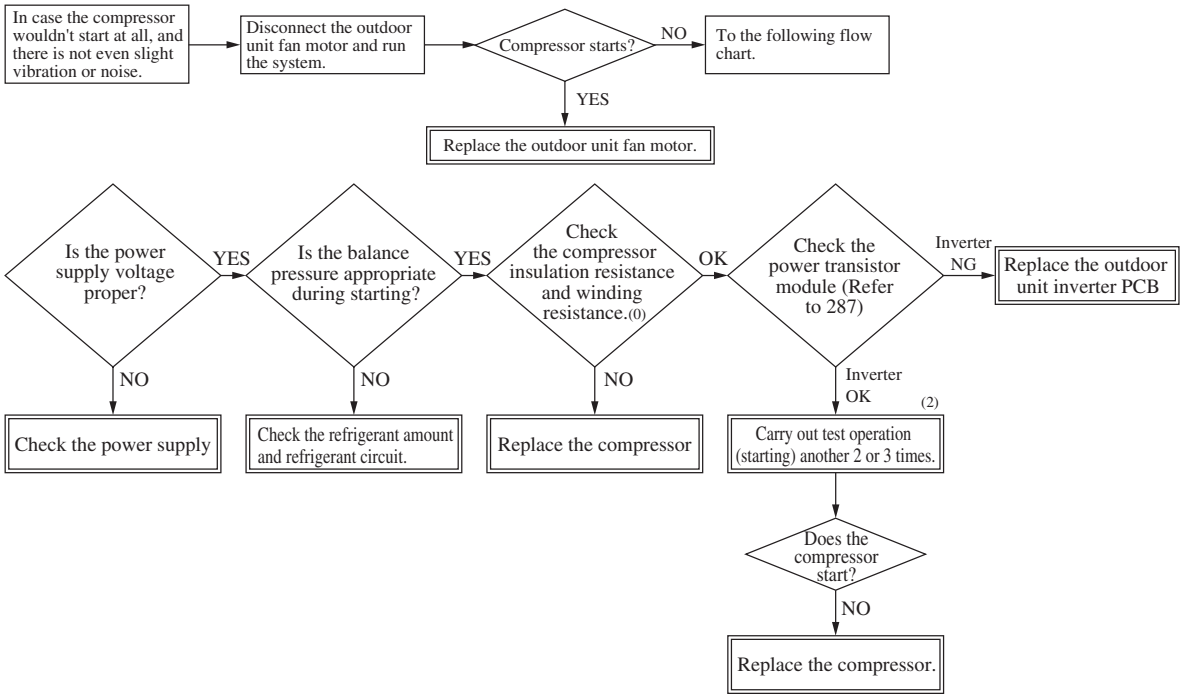
Note (1) If the test operation is repeated 2 or 3 times, the liquid refrigerant inside the compressor may be expelled from the compressor may recover from its starting anomaly.

- Display conditions
  (1) The error occurs when the compressor wouldn't operate after attempting to start 2 times by 7 times.
  (2) Remote controller reset is possible after 3 minutes have passed.

• Models FDCVA302~1002

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	5 time flash
Green LED	Keeps flashing	Green LED	Keeps flashing

Note (1) Check if the power supply system is normal.


In case the compressor wouldn't start at all, and there is not even slight vibration or noise.
Disconnect the outdoor unit fan motor and run the system.
Compressor starts?
NO
To the following flow chart.
YES
Replace the outdoor unit fan motor.
Is the power supply voltage proper?
YES
Is the balance pressure appropriate during starting?
YES
Check the compressor insulation resistance and winding resistance.(0)
OK
Check the power transistor module (Refer to 287)
Inverter NG
Replace the outdoor unit inverter PCB
NO
NO
NO
Inverter OK
(2)
Check the power supply
Check the refrigerant amount and refrigerant circuit.
Replace the compressor
Carry out test operation (starting) another 2 or 3 times.
Does the compressor start?
NO
Replace the compressor.

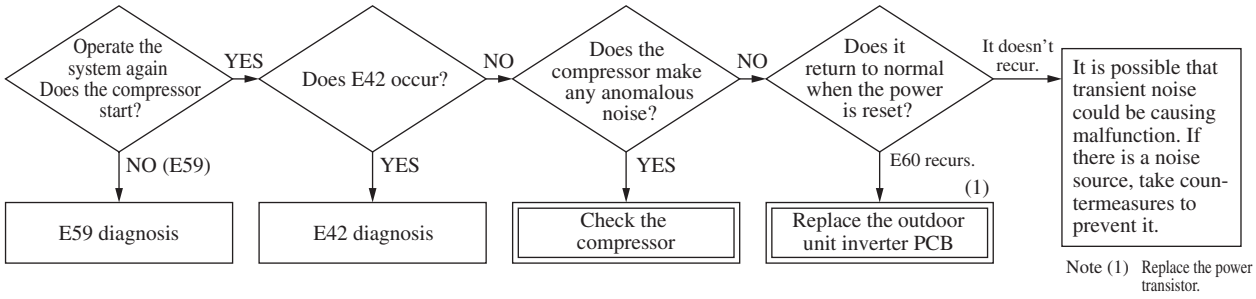
Notes (1) The winding resistance is 0.4Ω or more at 25°C.
(2) If the test operation is repeated 2 or 3 times, the liquid refrigerant inside the compressor may be expelled from the compressor may recover from its starting anomaly.

- Display conditions
  (1) The error occurs when the compressor wouldn't operate after attempting to start 10 times by 2 sets.
  (2) Remote controller reset is possible after 3 minutes have passed.

23 Error display : E60 [Compressor loader position detection error] [Only case of 151 ~ 251, 802, 1002 models]

Indoor unit		Outdoor unit	
Red LED	Stays OFF	Red LED	1 time flash
Green LED	Keeps flashing		Keep flashing

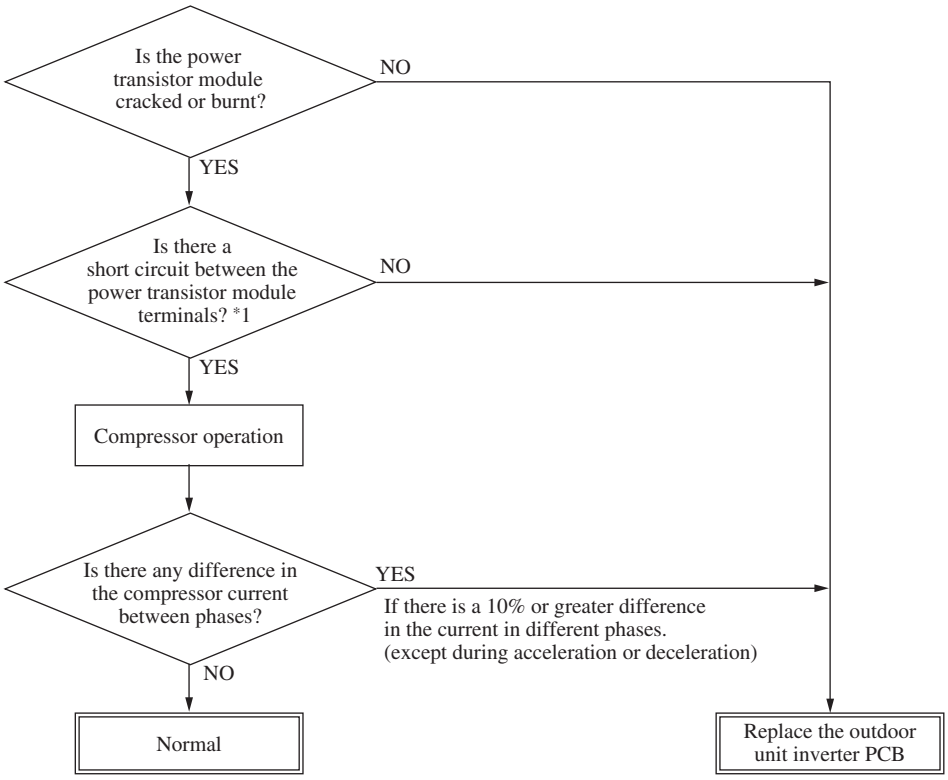
Note (1) Check if the power supply system is normal.


Operate the system again Does the compressor start?
YES
Does E42 occur?
NO
Does the compressor make any anomalous noise?
NO
Does it return to normal when the power is reset?
It doesn't recur.
It is possible that transient noise could be causing malfunction. If there is a noise source, take countermeasures to prevent it.
NO (E59)
YES
YES
E60 recurs.
(1)
E59 diagnosis
E42 diagnosis
Check the compressor
Replace the outdoor unit inverter PCB

Note (1) Replace the power transistor.

- Display conditions
  (1) The error occurs when the rotor position cannot be detected 4 times within 15 minutes after once it is detected.
  (2) After 3 minutes passes, it is reset with the remote controller is possible.

Power transistor module (including the driver PCB) inspection procedure


Is the power transistor module cracked or burnt?
NO
YES
Is there a short circuit between the power transistor module terminals? *1
NO
YES
Compressor operation
Is there any difference in the compressor current between phases?
YES
If there is a 10% or greater difference in the current in different phases. (except during acceleration or deceleration)
NO
Normal
Replace the outdoor unit inverter PCB

Note (1) In models 802 and 1002, also replace the power transistor.

*1 Power transistor module terminal short circuit check procedure

Disconnect the compressor wiring, then conduct a short circuit check.

P-U, P-V, P-W

N-U, N-V, N-W

Check between the P-N terminals.

Bring the tester probes in contact with the following places on each terminal.

P: Power transistor P terminal,

N: Power transistor N terminal,

U: End of red harness to compressor

V: End of white harness to compressor

W: End of black or blue harness to compressor

Check for a power transistor short circuit.

- When you do not have a diagnostic checker for judging if the inverter is defective, measure between the terminals of the power transistor parts, judge whether the power transistor is defective or not.
- Disconnect the compressor, then measure with the controller incorporated.

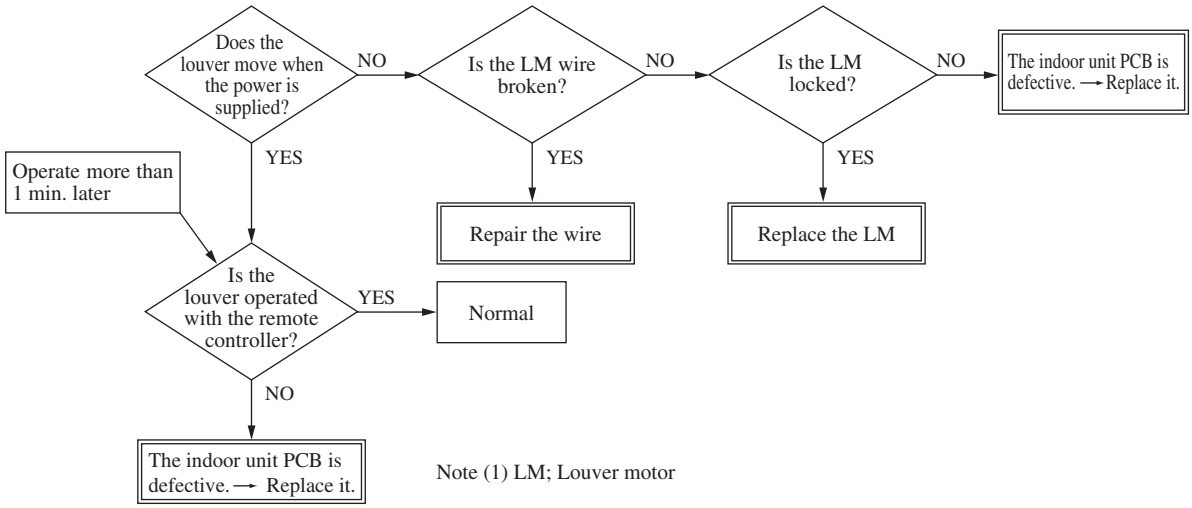
Tester		Normal values (Ω)			
Terminal (+)	Terminal (-)	151 ~ 251	302 ~ 602 HENAR	402 ~ 602 HESAR	802, 1002
P	N	0 ~ (Numerical value rises.)	0 ~ (Numerical value rises.)	0 ~ (Numerical value rises.)	0 ~ (Numerical value rises.)
N	P				
P	U	Several M (Numerical value rises.)	Several M (Numerical value rises.)	Approx. 1.9M	Approx. 500 k
P	V				
P	W				
N	U	Approx. 180 k	Approx. 650 k	Approx. 200~450 k	Approx. 500 k
N	V				
N	W				
U	P	Approx. 160 k	Approx. 670 k	Approx. 930 k	Approx. 500 k
V	P		Approx. 4.4 M		
W	P		Approx. 4.4 M		
U	N	Approx. 240 k	Approx. 650 k	Approx. 1.7M	Approx. 500 k
V	N		Approx. 4.8 M		
W	N		Approx. 4.9 M		

If the measured values range from 0 ~ several kΩ, there is a possibility that the elements are damaged, so replace the power transistor parts.

(5) Inspection procedure for the failure which doesn't have an error code

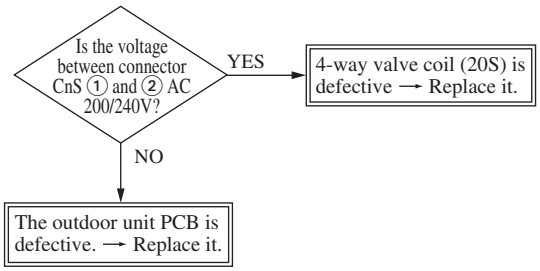
(a) Louver motor does not operate

▶ Inspect at the indoor unit side.



Note (1) LM; Louver motor

(b) 4 way valve does not switch during heating operation


Is the voltage between connector CnS ① and ② AC 200/240V?
YES
4-way valve coil (20S) is defective → Replace it.
NO
The outdoor unit PCB is defective. → Replace it.

(6) Check anomalous operation data with the wired remote controller

Operation data are recorded when there is an anomalous state and these data can be displayed in the remote controller by operating the remote controller buttons.

(1) Press the CHECK button.
The display will change from " FUNCTION" → " SET " → "OPERATION DATA ▼"

(2) Press the ▼ button once. The display will change to "ERROR DATA ▲".

(3) Press the SET button to enter the anomalous operation data display mode.

(4) If there are anomalous from the past, they will be displayed by an error code and unit No.
(Example) "E8" (Lighted up)
"I/U No. 00 ▲" (Flashing)

(5) Using the ▲ or ▼ button, select the indoor unit No. you want to display the error data for.
If only one indoor unit is connected, the indoor unit No. does not change.

(6) Fix the selection using the SET button. (The displayed indoor unit No. will change from flashing to light up continuously.)
(Example) "E8"
"DATA LOADING" (This message flashes while data are being read.)
↓
"E8"
"ERROR DATA "
The data are then displayed beginning with item No. 01.
Displayed items are as shown below.

(7) Display the other data for when the error occurred in order from the currently displayed operation data No. 01 using the ▲ or ▼ button.
* Depending on the model, items for which corresponding data do not exist are not displayed.

(8) To change the indoor unit, press the AIR CON No. button and return to the indoor unit selection display.

(9) Press the ON/OFF button to end the anomalous operation data check.

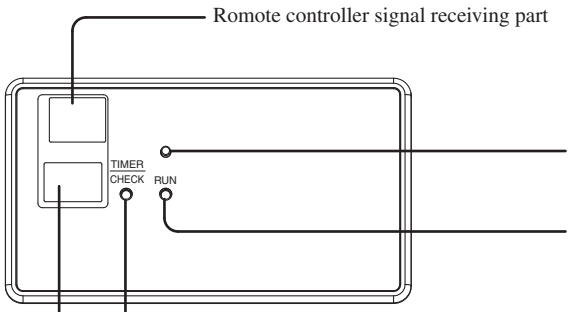
If you press the RESET button during the settings, the display returns to the previous setting screen.

No.	Data item
01	(Operation mode)
02	SET TEMP
03	RETURN AIR
04	I/U HEAT EXCH1
05	I/U HEAT EXCH2
07	I/U FAN
11	TOTAL I/U RUN
21	OUTDOOR
22	O/U HEAT EXCH1
23	O/U HEAT EXCH2
24	COMP HERTZ
26	Lo PRESSURE
27	DISCHARGE
28	DOME BOTTOM
29	CT
31	O/U FAN
32	SILENT MODE ON/OFF
34	63H1 ON/OFF
35	DEFROST ON/ OFF
36	TOTAL COMP RUN
37	EEV1

1.6.4 Check display on wireless specification models (FDEN · FDKN· FDT)

(1) Indication board

(a) FDEN Series



Romote controller signal receiving part

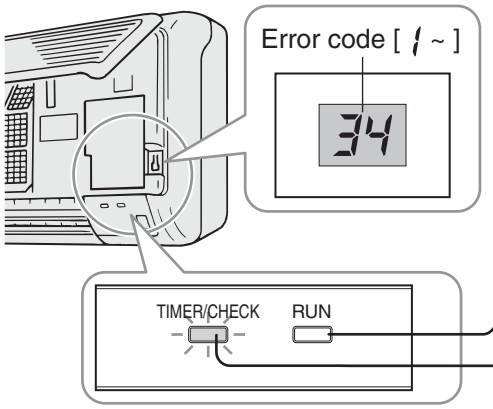
Backup switch

Operation display light (Green)
- Lights continuously: Under air conditioner operation
- Keeps flashing: Under heating preparation (At the time of heating operation)
- 3 time flash: Under reception of a remote controller signal

Timer/Check display light (Yellow)
- Lights continuously: Under timer operation
- 0.5 seconds lighting, 0.5 seconds stays OFF : At the time of anomalous
- 2 seconds lighting, 1 second stays OFF : Filter sign

Check monitor
(Error code display E1~E60)

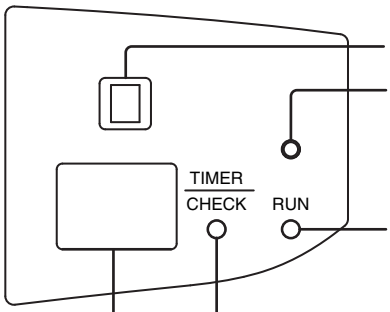
(b) FDKN Series



Operation display light (Green) – – – – – – – – Flashes 3 times when a signal is received from the remote controller.
The following two kinds are displayed.
- Lights continuously: Under air conditioner operation
- Keeps flashing: Under heating preparation

Timer/Check display (Yellow)
The following three kinds are displayed.
- Lights continuously:Under timer operation
- Long lighting (2 seconds lighting, 1 second stays OFF): Filter sign
  (Clean the air filter when this display is output.)
- Short lighting (0.5 seconds lighting, 0.5 seconds stays OFF): At the time of the anomalous air conditioner

(c) FDT (Wireless kit)



Remote controller signal receiving part

Backup switch

Operation display light (Green)
- Light continuously: Under air conditioner operation
- Keeps flashing: Under heating preparation (At the time of heating operation)
- 3 time flash: Under reception of a remote controller signal

Timer/Check display light (Yellow)
- Light continuously: Under timer operation
- 0.5 seconds lighting, 0.5 seconds stays OFF: At the time of anomalous
- 2 seconds lighting, 1 second stays OFF: Filter sign

Check monitor
(Error code display E1 ~ E60)

2. MULTI-TYPE (V MULTI) PACKAGED AIR-CONDITIONER

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2.1 GENERAL INFORMATION

2.1.1 Specific features

Ideal for the installation in Large, single zone open Areas and L-shaped rooms, the Muliti-Type V series allows an extensive degree of flexibility in the selection of indoor units. Specifically, the selection of indoor units with differing capacities and differing or similar types is available, as is the selection of indoor units with similar capacities and differing types. Furthermore, a maximun of up to four individual indoor units can be opened with a single outdoor unit.

(1) All models employ R410A, with RoHS compliance.

(2) Industry leading COP.
Thanks to achievement of the highest COP level in the industry, the energy consumption has been cut by 24~38% compared with our former models (constant speed models).

(3) Energy labeling "Class A"
MHI models have cleared the class A standard, the highest energy saving level, with their high COP (coefficient of performance).

(4) The microcomputer chip is installed in the indoor unit and outdoor unit. There is no need for the unit to communicate between the outdoor and indoor units so the unit is more resistant to electromagnetic noise thus the incidence of microcomputer malfunction has been reduced. The compressor in the outdoor unit has its own self protection function, that reacts according to abnormal high pressure and excessive high temperature.

(5) There are only three power lines between the outdoor and indoor unit. One cabtyre cable with 3 wires encased in one sheath is enough for conducting the wiring work between the outdoor unit and the indoor unit. This contributes to simpler wiring work in the field.

(6) All air supply ports have auto swing louvers. (Only case of FDTC, FDT, FDEN and FDKN models). The indoor fan motor has three speeds of high, medium and low.

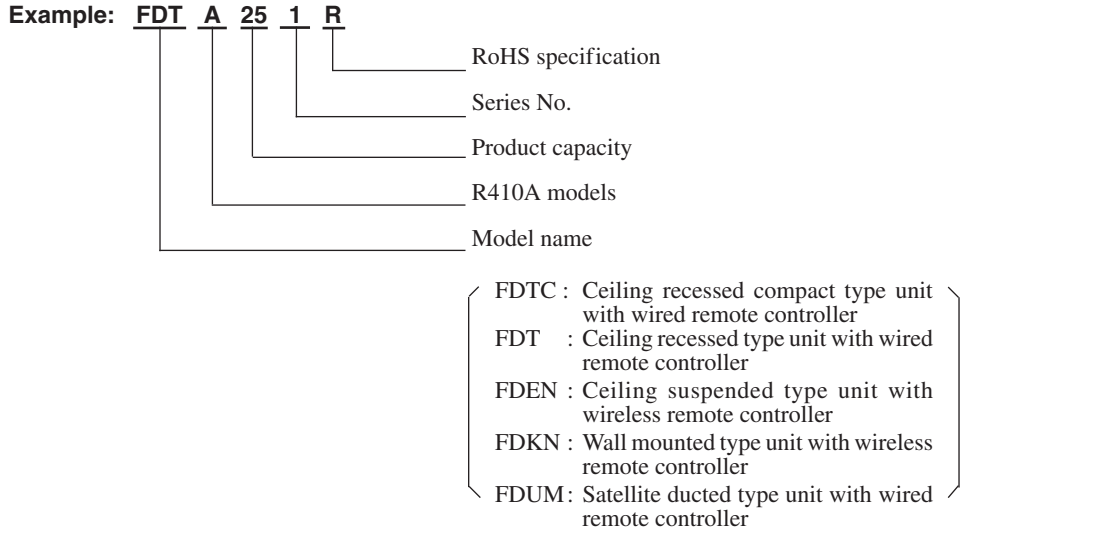
(7) All models have service valves protruding from the outdoor unit for faster flare connection (FDCVA802, 1002: Only a gas side is brazing) work in the field.

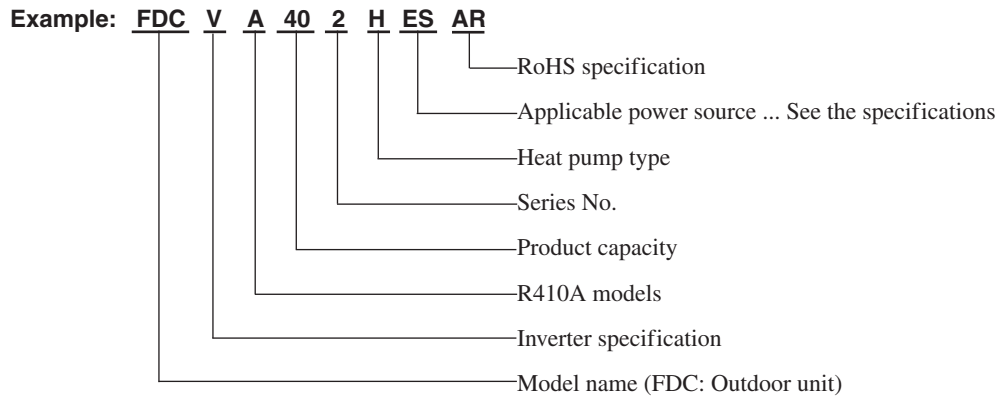
(8) The size and weight of the outdoor units in the FDCVA 302 series have been greatly reduced.Use of an inverter has also improved energy conservation and economy.

(9) Compared to the previous models, a single fan is used in the FDCVA 402 ~ 602 outdoor unit models and forward blowing is used in the 802 and 1002 models, resulting in markedly reduced weight and greater compactness. In addition, use of an inverter makes these units much more economical compared to the previous fixed speed units.

(10) Realization of significant reduction in size and weight compared with our former models, applying front blow outlet on all models. Reductions are 50% in weight of 6HP, 72% in volume of 8HP and 63% in the foot print of 8HP.

2.1.2 How to read the model name


Example: FDT A 25 1 R
RoHS specification
Series No.
Product capacity
R410A models
Model name
FDTC : Ceiling recessed compact type unit with wired remote controller
FDT : Ceiling recessed type unit with wired remote controller
FDEN : Ceiling suspended type unit with wireless remote controller
FDKN : Wall mounted type unit with wireless remote controller
FDUM : Satellite ducted type unit with wired remote controller



2.1.3 Table of models

Model \ Capacity	15	20	25	30	40	50
Ceiling recessed compact type (FDTC)	○	○				
Ceiling recessed type (FDT)	○	○	○	○	○	○
Ceiling suspended type (FDEN)	○	○	○	○	○	○
Wall mounted type (FDKN)	○	○	○			
Satellite ducted type (FDUM)		○	○	○	○	○
Outdoor unit to be combined (FDC)	FDCVA302HENR (3 Horse Power) FDCVA402HENAR FDCVA402HESAR (4 Horse Power)	FDCVA502HENAR FDCVA502HESAR (5 Horse Power)	FDCVA602HENAR FDCVA602HESAR (6 Horse Power)	FDCVA802HESAR (8 Horse Power)		FDCVA1002HESAR (10 Horse Power)

2.1.4 Table of system combinations

Outdoor unit	Type	Indoor unit assembly capacity	Branch pipe set (Optional)
FDCVA302HENR	Twin	15+15	DIS-WA1
FDCVA402HENAR FDCVA402HESAR		20+20	
FDCVA502HENAR FDCVA502HESAR		25+25 20+30	
FDCVA602HENAR FDCVA602HESAR	Twin	30+30	
	Triple	20+20+20	DIS-TA1
FDCVA802HESAR	Twin	40+40	DIS-WB1
		30+50	
	Triple	30+30+30	DIS-TB1
	Double twin	20+20+20+20	DIS-WA1 x 2set DIS-WB1 x 1set
FDCVA1002HESAR	Twin	50+50	DIS-WB1
	Triple	20+40+40	DIS-TB1
		25+25+50	
		30+30+40	
	Double twin	25+25+25+25	DIS-WA1 x 2set DIS-WB1 x 1set

Notes (1) It is possible to used different models (FDTC,FDT, FDUM, FDEN) when combining indoor units.
(2) Always use the branch piping set (optional) at branches in the refrigerant piping.
(3) If wireless specifications are used, use 1 wireless indoor unit in combination with wired indoor units.

2.2 SELECTION DATA

2.2.1 Specifications

(1) Indoor unit

(a) Ceiling recessed compact type (FDTC)

Models FDTCA151R, 201R

Item \ Model		FDTCA151R	FDTCA201R
Nominal cooling capacity(1)	**kW**	**4.0**	**5.0**
Nominal heating capacity(1)	**kW**	**4.5**	**5.6**
Power source		**1 Phase, 220-240V 50Hz / 220V 60Hz**	
Noise level	dB(A)	Powerful mode Hi: 46 Me : 42 Lo: 38 Mild mode Hi: 42 Me : 38 Lo: 35	
Exterior dimensions Height × Width × Depth	**mm**	**Unit:248 × 570 × 570 Panel:35 × 700 × 700**	
Net weight	**kg**	**19.5 (Unit: 16 Panel: 3.5)**	
Refrigerant equipment Heat exchanger		Louver fin & inner grooved tubing	
Refrigerant control		—	
Air handling equipment Fan type & Q'ty		Turbo fan × 1	
Motor	**W**	**90×1**	
Starting method		Direct line start	
Air flow(Standard)	**CMM**	**Powerful mode Hi: 13.5 Me : 11.5 Lo: 10 Mild mode Hi: 11.5 Me : 10 Lo: 8**	
Outside air intake		Impossibility	
Air filter, Q'ty		Plastic net (Washable) × 1	
Shock & vibration absorber		Rubber sleeve (for fan motor)	
Operation control Operation switch		Wired remote control switch (Optional: RC-E1R) Wireless kit (Optional)	
Room temperature control		Thermostat by electronics	
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.	
Installation data Refrigerant piping size	**mm(in)**	**Liquid line: ϕ6.35 (1/4") Gas line: ϕ12.7 (1/2")**	
Connecting method		**Flare piping**	
Drain hose		Connectable with VP25 (I.D.25 mm, O.D.32 mm)	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		**Mounting kit. Drain hose**	
Optional parts		**Decorative Panel**	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1
Heating	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

● Decorative Panel model or Wireless kit (Optional)

Model \ Item	Panel Part No.	Wireless kit
FDTA151R, 201R	TC-PSA-24W-ER	RCND-KIT-HER

(b) Ceiling recessed type (FDT)

Models FDTA151R, 201R, 251R

Item \ Model		FDTA151R	FDTA201R	FDTA251R
Nominal cooling capacity(1)	**kW**	**4.0**	**5.0**	**5.6**
Nominal heating capacity(1)	**kW**	**4.5**	**5.6**	**6.3**
Power source		**1 Phase, 220-240V 50Hz / 220V 60Hz**		
Noise level	dB(A)	Powerful mode Hi: 36 Me : 33 Lo: 32 Mild mode Hi: 33 Me : 32 Lo: 31		Powerful mode Hi: 38 Me : 35 Lo: 33 Mild mode Hi: 35 Me : 33 Lo: 31
Exterior dimensions Height × Width × Depth	**mm**	**Unit:270 × 840 × 840 Panel:35× 950 × 950**		
Net weight	**kg**	**31 (Unit: 24 Panel: 7)**		
Refrigerant equipment Heat exchanger		Louver fin & inner grooved tubing		
Refrigerant control		—		
Air handling equipment Fan type & Q'ty		Turbo fan × 1		
Motor	**W**	**14×1**		**20×1**
Starting method		Direct line start		
Air flow(Standard)	**CMM**	**Powerful mode Hi: 18 Me : 15 Lo: 14 Mild mode Hi: 15 Me : 14 Lo: 13**		**Powerful mode Hi: 20 Me : 17 Lo: 15 Mild mode Hi: 17 Me : 15 Lo: 13**
Outside air intake		Available		
Air filter, Q'ty		Plastic net (Washable) × 1		
Shock & vibration absorber		Rubber sleeve (for fan motor)		
Operation control Operation switch		Wired remote control switch (Optional: RC-E1R) Wireless kit (Optional)		
Room temperature control		Thermostat by electronics		
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.		
Installation data Refrigerant piping size	**mm(in)**	**Liquid line: ϕ6.35 (1/4") Gas line: ϕ12.7 (1/2")**		**Liquid line: ϕ6.35 (1/4") Gas line: ϕ15.88 (5/8")**
Connecting method		**Flare piping**		
Drain hose		Connectable with VP25 (I.D.25 mm, O.D.32 mm)		
Insulation for piping		Necessary (both Liquid & Gas lines)		
Accessories		**Mounting kit. Drain hose**		
Optional parts		**Decorative Panel**		

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1
Heating	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

● Decorative Panel model or Wireless kit (Optional)

Model \ Item	Panel Part No.	Wireless kit
FDTA151R, 201R, 251R	T-PSA-35W-ER	RCN-T-35W-ER

Models FDTA301R, 401R

Item \ Model		FDTA301R	FDTA401R [3]
Nominal cooling capacity[1]	**kW**	**7.1**	**10.0**
Nominal heating capacity[1]	**kW**	**8.0**	**11.2**
Power source		**1 Phase, 220-240V 50Hz / 220V 60Hz**	
Noise level	dB(A)	Powerful mode Hi: 38 Me: 35 Lo: 33 Mild mode Hi: 35 Me: 33 Lo: 31	Powerful mode Hi: 46 Me: 43 Lo: 41 Mild mode Hi: 43 Me: 41 Lo: 38
Exterior dimensions Height × Width × Depth	**mm**	**Unit:295 × 840 × 840 Panel:35 × 950 × 950**	
Net weight	**kg**	**31 (Unit:24 Panel:7)**	**33 (Unit:26 Panel:7)**
Refrigerant equipment Heat exchanger		Louver fin & inner grooved tubing	
Refrigerant control		—	
Air handling equipment Fan type & Q'ty		Turbo fan × 1	
Motor	**W**	**20×1**	**40×1**
Starting method		Direct line start	
Air flow(Standard)	**CMM**	**Powerful mode Hi: 20 Me: 17 Lo: 15 Mild mode Hi: 17 Me: 15 Lo: 13**	**Powerful mode Hi: 25 Me: 22 Lo: 20 Mild mode Hi: 22 Me: 20 Lo: 18**
Outside air intake		Available	
Air filter, Q'ty		Plastic net (Washable) × 1	
Shock & vibration absorber		Rubber sleeve (for fan motor)	
Operation control Operation switch		Wired remote control switch (Optional: RC-E1R) Wireless kit (Optional)	
Room temperature control		Thermostat by electronics	
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.	
Installation data Refrigerant piping size	**mm(in)**	**Liquid line: ϕ9.52 (3/8") Gas line: ϕ15.88 (5/8")**	
Connecting method		**Flare piping**	
Drain hose		Connectable with VP25 (I.D.25 mm, O.D.32 mm)	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		**Mounting kit. Drain hose**	
Optional parts		**Decorative Panel**	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1
Heating	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(3) Not available in 60Hz

● Decorative Panel model or Wireless kit (Optional)

Model \ Item	Panel Part No.	Wireless kit
FDTA301R, 401R	T-PSA-35W-ER	RCN-T-35W-ER

Model FDTA501R

Item \ Model		FDTA501R
Nominal cooling capacity(1)	**kW**	**12.5**
Nominal heating capacity(1)	**kW**	**14.0**
Power source		**1 Phase, 220-240V 50Hz / 220V 60 Hz**
Noise level	dB(A)	Powerful mode Hi: 48 Me: 45 Lo: 43 Mild mode Hi: 45 Me: 43 Lo: 40
Exterior dimensions Height × Width × Depth	**mm**	**Unit:365 × 840 × 840 Panel:35 × 950 × 950**
Net weight	**kg**	**38 (Unit:31 Panel:7)**
Refrigerant equipment Heat exchanger		Louver fin & inner grooved tubing
Refrigerant control		—
Air handling equipment Fan type & Q'ty		Turbo fan × 1
Motor	**W**	**120×1**
Starting method		Direct line start
Air flow(Standard)	**CMM**	**Powerful mode Hi: 32 Me: 29 Lo: 26 Mild mode Hi: 29 Me: 26 Lo: 23**
Outside air intake		Available
Air filter, Q'ty		Plastic net (Washable) × 1
Shock & vibration absorber		Rubber sleeve (for fan motor)
Operation control Operation switch		Wired remote control switch (Optional: RC-E1R) Wireless kit (Optional)
Room temperature control		Thermostat by electronics
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.
Installation data Refrigerant piping size	**mm(in)**	**Liquid line: ϕ9.52 (3/8") Gas line: ϕ15.88 (5/8")**
Connecting method		**Flare piping**
Drain hose		Connectable with VP25 (I.D.25 mm, O.D.32 mm)
Insulation for piping		Necessary (both Liquid & Gas line)
Accessories		**Mounting kit. Drain hose**
Optional parts		**Decorative Panel**

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1
Heating	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

● Decorative Panel model or Wireless kit (Optional)

Model \ Item	Panel Part No.	Wireless kit
FDTA501R	T-PSA-35W-ER	RCN-T-35W-ER

(c) Ceiling suspended type (FDEN)

Models FDENA151R, 201R, 251R

Item \ Model		FDENA151R	FDENA201R	FDENA251R
Nominal cooling capacity(1)	**kW**	**4.0**	**5.0**	**5.6**
Nominal heating capacity(1)	**kW**	**4.5**	**5.6**	**6.3**
Power source		**1 Phase, 220-240V 50Hz / 220V 60Hz**		
Noise level	dB(A)	Powerful mode Hi: 42 Me : 39 Lo: 38 Mild mode Hi: 39 Me : 38 Lo: 37		Powerful mode Hi: 44 Me : 41 Lo: 39 Mild mode Hi: 41 Me : 39 Lo: 38
Exterior dimensions Height × Width × Depth	**mm**	**210 × 1070 × 690**		**210 × 1320 × 690**
Net weight	**kg**	**30**		**36**
Refrigerant equipment Heat exchanger		Louver fin & inner grooved tubing		
Refrigerant control		—		
Air handling equipment Fan type & Q'ty		Multiblade centrifugal fan × 2		Multiblade centrifugal fan × 4
Motor	**W**	**30 × 1**		**20 × 2**
Starting method		Direct line start		
Air flow(Standard)	**CMM**	**Powerful mode Hi: 12 Me : 11 Lo: 9 Mild mode Hi: 11 Me : 9 Lo: 7**		**Powerful mode Hi: 20 Me : 18 Lo: 14 Mild mode Hi: 18 Me : 14 Lo: 12**
Outside air intake		Unavailable		
Air filter, Q'ty		Plastic net (Washable) × 2		
Shock & vibration absorber		Rubber sleeve (for fan motor)		
Operation control Operation switch		Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optional: RC-E1R)		
Room temperature control		Thermostat by electronics		
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.		
Installation data Refrigerant piping size	**mm(in)**	**Liquid line: ϕ6.35 (1/4") Gas line: ϕ12.7 (1/2")**		**Liquid line: ϕ6.35 (1/4") Gas line: ϕ15.88 (5/8")**
Connecting method		**Flare piping**		
Drain hose		Connectable with VP20 (I.D.20 mm, O.D.26 mm)		
Insulation for piping		Necessary (both Liquid & Gas line)		
Accessories		**Mounting kit. Drain hose**		
Optional parts		**—**		

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1
Heating	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

Models FDENA301R, 401R

Item \ Model		FDENA301R	FDENA401R
Nominal cooling capacity(1)	**kW**	**7.1**	**10.0**
Nominal heating capacity(1)	**kW**	**8.0**	**11.2**
Power source		**1 Phase, 220-240V 50Hz / 220V 60Hz**	
Noise level	dB(A)	Powerful mode Hi: 44 Me: 41 Lo: 39 Mild mode Hi: 41 Me: 39 Lo: 38	Powerful mode Hi: 46 Me: 44 Lo: 41 Mild mode Hi: 44 Me: 41 Lo: 39
Exterior dimensions **Height × Width × Depth**	**mm**	**210 ×1320 ×690**	**250 ×1620 ×690**
Net weight	**kg**	**36**	**46**
Refrigerant equipment Heat exchanger		Louver fin & inner grooved tubing	
Refrigerant control		—	
Air handling equipment Fan type & Q'ty		Multiblade centrifugal fan × 4	
Motor	**W**	**20×2**	**40×2**
Starting method		Direct line start	
Air flow(Standard)	**CMM**	**Powerful mode Hi: 20 Me: 18 Lo: 14** **Mild mode Hi: 18 Me: 14 Lo: 12**	**Powerful mode Hi: 29 Me: 26 Lo: 23** **Mild mode Hi: 26 Me: 23 Lo: 21**
Outside air intake		Unavailable	
Air filter, Q'ty		Plastic net (Washable) × 2	
Shock & vibration absorber		Rubber sleeve (for fan motor)	
Operation control Operation switch		Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optioanl: RC-E1R)	
Room temperature control		Thermostat by electronics	
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat	
Installation data **Refrigerant piping size**	**mm(in)**	**Liquid line: ϕ9.52 (3/8") Gas line: ϕ15.88 (5/8")**	
Connecting method		**Flare piping**	
Drain hose		Connectable with VP20 (I.D.20 mm, O.D.26 mm)	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		**Mounting kit. Drain hose**	
Optional parts		**—**	

Notes (1) The data are measured at the following conditions.

Item \ Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1
Heating	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

Model FDENA501R

Item \ Model		FDENA501R
Nominal cooling capacity(1)	**kW**	**12.5**
Nominal heating capacity(1)	**kW**	**14.0**
Power source		**1 Phase, 220-240V 50Hz / 220V 60Hz**
Noise level	dB(A)	Powerful mode Hi: 48 Me: 46 Lo: 44 Mild mode Hi: 46 Me: 44 Lo: 43
Exterior dimensions Height × Width × Depth	**mm**	**250 ×1620 × 690**
Net weight	**kg**	**46**
Refrigerant equipment Heat exchanger		Louver fin & inner grooved tubing
Refrigerant control		—
Air handling equipment Fan type & Q'ty		Multiblade centrifugal fan ×4
Motor	**W**	**45×2**
Starting method		Direct line start
Air flow(Standard)	**CMM**	**Powerful mode Hi: 31 Me: 29 Lo: 26 Mild mode Hi: 29 Me: 26 Lo: 23**
Outside air intake		Unavailable
Air filter, Q'ty		Plastic net (Washable) × 2
Shock & vibration absorber		Rubber sleeve (for fan motor)
Operation control Operation switch		Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optioanl: RC-E1R)
Room temperature control		Thermostat by electronics
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.
Installation data Refrigerant piping size	**mm(in)**	**Liquid line: ϕ9.52 (3/8") Gas line: ϕ15.88 (5/8")**
Connecting method		**Flare piping**
Drain hose		Connectable with VP20 (I.D.20 mm, O.D.26 mm)
Insulation for piping		Necessary (both Liquid & Gas lines)
Accessories		**Mounting kit. Drain hose**
Optional parts		**—**

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1
Heating	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(d) Wall mounted type (FDKN)

Models FDKNA151R, 201R

Item \ Model		FDKNA151R	FDKNA201R
Nominal cooling capacity(1)	**kW**	**4.0**	**5.0**
Nominal heating capacity(1)	**kW**	**4.5**	**5.6**
Power source		**1 Phase, 220-240V 50Hz / 220V 60Hz**	
Noise level	dB(A)	Powerful mode Hi: 44 Me: 42 Lo: 40 Mild mode Hi: 42 Me: 40 Lo: 37	Powerful mode Hi: 47 Me: 44 Lo: 41 Mild mode Hi: 44 Me: 41 Lo: 38
Exterior dimensions Height × Width × Depth	**mm**	**298 × 840 × 240**	
Net weight	**kg**	**12**	
Refrigerant equipment Heat exchanger		Slitted fin & inner grooved tubing	
Refrigerant control		—	
Air handling equipment Fan type & Q'ty		Tangential fan ×1	
Motor	**W**	**33×1**	
Starting method		Direct line start	
Air flow(Standard)	**CMM**	**Powerful mode Hi: 12 Me: 11 Lo: 10** **Mild mode Hi: 11 Me: 10 Lo: 9**	**Powerful mode Hi: 13 Me: 12 Lo: 11** **Mild mode Hi: 12 Me: 11 Lo: 9**
Outside air intake		Unavailable	
Air filter, Q'ty		Plastic net (Washable) × 2	
Shock & vibration absorber		Rubber sleeve (for fan motor)	
Operation control Operation switch		Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optioanl: RC-E1R)	
Room temperature control		Thermostat by electronics	
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.	
Installation data Refrigerant piping size	**mm(in)**	**Liquid line: ϕ6.35 (1/4") Gas line: ϕ12.7 (1/2")**	
Connecting method		**Flare piping**	
Drain hose		Connectable with VP16 (I.D.16 mm, O.D.22 mm)	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		**Mounting kit. Drain hose**	
Optional parts		**—**	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1
Heating	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

Model FDKNA251R

Item \ Model		FDKNA251R
Nominal cooling capacity(1)	**kW**	**5.6**
Nominal heating capacity(1)	**kW**	**6.3**
Power source		**1 Phase, 220-240V 50Hz / 220V 60Hz**
Noise level	dB(A)	Powerful mode Hi: 48 Me: 45 Lo: 42 Mild mode Hi: 45 Me: 42 Lo: 39
Exterior dimensions Height × Width × Depth	**mm**	**298 × 840 × 240**
Net weight	**kg**	**12**
Refrigerant equipment Heat exchanger		Slitted fin & inner grooved tubing
Refrigerant control		—
Air handling equipment Fan type & Q'ty		Tangential fan × 1
Motor	**W**	**33 × 1**
Starting method		Direct line start
Air flow(Standard)	**CMM**	**Powerful mode Hi: 14 Me: 13 Lo: 11 Mild mode Hi: 13 Me: 11 Lo: 10**
Outside air intake		Unavailable
Air filter, Q'ty		Plastic net (Washable) × 2
Shock & vibration absorber		Rubber sleeve (for fan motor)
Operation control Operation switch		Wireless remote control switch (Optional: RCN-E1R) Wired remote control switch (Optioanl: RC-E1R)
Room temperature control		Thermostat by electronics
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat.
Installation data Refrigerant piping size	**mm(in)**	**Liquid line: ϕ6.35 (1/4") Gas line: ϕ15.88 (5/8")**
Connecting method		**Flare piping**
Drain hose		Connectable with VP16 (I.D.16 mm, O.D.22 mm)
Insulation for piping		Necessary (both Liquid & Gas lines)
Accessories		**Mounting kit. Drain hose**
Optional parts		**—**

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling	27℃	19℃	35℃	24℃	ISO-T1
Heating	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(e) Satellite ducted type (FDUM)

Models FDUMA202R, 252R, 302R

Item \ Models		FDUMA202R	FDUMA252R	FDUMA302R
Nominal cooling capacity*1	**kW**	**5.0**	**5.6**	**7.1**
Nominal heating capacity*2	**kW**	**5.4**	**6.4**	**8.0**
Power source		**1 Phase 220-240V 50Hz/220V 60Hz**		
Noise level	dB(A)	Hi: 34 Me: 31 Lo: 28		Hi: 35 Me: 32 Lo: 29
Exterior dimensions Height × Width × Depth	**mm**	**299 × 750 × 635**	**299 × 950 × 635**	
Net weight	**kg**	**34**	**40**	
Refrigerant equipment Heat exchanger		Louver fin & inner grooved tubing		
Refrigerant control		Electronic expansion valve		
Air handling equipment Fan type & Q'ty		Multiblade centrifugal fan × 2		
Motor	**W**	**55×1**	**90×1**	**100×1**
Starting method		Direct line start		
Air flow(Standard)	**CMM**	**Hi: 14 Me: 12 Lo: 11**	**Hi: 18 Me: 16 Lo: 14**	**Hi: 20 Me: 18 Lo: 15**
Available static pressure (at Hi)	**Pa**	**Standard:50, Hi speed:85**		
Outside air intake		–		
Air filter, Q'ty		–		
Shock & vibration absorber		Rubber sleeve(for fan motor)		
Insulation (noise & heat)		Polyurethane foam		
Operation control Operation switch		**Wired remote control switch (Optional:RC-E1R) Wireless kit (Optional)**		
Room temperature control		Thermostat by electronics		
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat		
Installation data Refrigerant piping size	**mm(in)**	**Liquid line:φ6.35(1/4") Gas line:φ12.7(1/2")**	**Liquid line:φ6.35(1/4") Gas line:φ15.88(5/8")**	**Liquid line:φ9.52(3/8") Gas line:φ15.88(5/8")**
Connecting method		**Flare piping**		
Drain hose		Connectable with VP25(I.D.25mm, O.D.32mm)		
Insulation for piping		Necessary (both Liquid & Gas lines)		
Accessories		**Mounting kit, Drain hose**		
Optional parts		**Filter kit**		

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling*1	27℃	19℃	35℃	24℃	ISO-T1
Heating*2	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

●Filter kit (Optional)

Model \ Item	Filter kit No.
FDUMA202R	UM-FL1E
FDUMA252R,302R	UM-FL2E

●Wireless kit (Optional)

Model \ Item	Wireless kit
FDUMA202R~302R	RCND-KIT-HER

Models FDUMA402R, 502R

Item \ Models		FDUMA402R	FDUMA502R
Nominal cooling capacity*1	**kW**	**10.0**	**12.5**
Nominal heating capacity*2	**kW**	**11.2**	**14.0**
Power source		**1 Phase 220-240V 50Hz/220V 60Hz**	
Noise level	dB(A)	Hi: 37 Me: 35 Lo: 32	Hi: 38 Me: 36 Lo: 33
Exterior dimensions Height × Width × Depth	**mm**	**350 × 1370 × 635**	
Net weight	**kg**	**59**	
Refrigerant equipment Heat exchanger		Louver fin & inner grooved tubing	
Refrigerant control		Electronic expansion valve	
Air handling equipment Fan type & Q'ty		Multiblade centrifugal fan× 3	
Motor	**W**	**45 × 1, 90 × 1**	**50 × 1, 100 × 1**
Starting method		Direct line start	
Air flow(Standard)	**CMM**	**Hi: 28 Me: 25 Lo: 22**	**Hi: 34 Me: 31 Lo: 27**
Available static pressure (at Hi)	**Pa**	**Standard:60, Hi speed:90**	**Standard:60, Hi speed:85**
Outside air intake		–	
Air filter, Q'ty		–	
Shock & vibration absorber		Rubber sleeve(for fan motor)	
Insulation (noise & heat)		Polyurethane foam	
Operation control Operation switch		**Wired remote control switch (Optional:RC-E1R) Wireless kit (Optional)**	
Room temperature control		Thermostat by electronics	
Safety equipment		Internal thermostat for fan motor. Frost protection thermostat	
Installation data Refrigerant piping size	**mm(in)**	**Liquid line:ϕ9.52(3/8"),Gas line:ϕ15.88(5/8")**	
Connecting method		**Flare piping**	
Drain hose		Connectable with VP25(I.D.25mm, O.D.32mm)	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		**Mounting kit, Drain hose**	
Optional parts		**Filter kit**	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature		Outdoor air temperature		Standards
	DB	WB	DB	WB	
Cooling*1	27℃	19℃	35℃	24℃	ISO-T1
Heating*2	20℃	—	7℃	6℃	

(2) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

●Filter kit (Optional)

Model \ Item	Filter kit No.
FDUMA402R, 502R	UM-FL3E

●Wireless kit (Optional)

Model \ Item	Wireless kit
FDUMA402R, 502R	RCND-KIT-HER

(2) Outdoor unit

Model FDCVA302HENR

Item \ Model		FDCVA302HENR
Power source		**1 Phase, 220-240V 50Hz / 220V 60Hz**
Nominal cooling capacity(1)	**kW**	**7.1 [3.5~8.0]**
Nominal heating capacity(1)	**kW**	**8.1 [4.0~9.0]**
Noise level	dB(A)	48
Exterior dimensions Height × Width × Depth	**mm**	**750× 880(+88) ×340**
Net weight	**kg**	**60**
Refrigerant equipment compressor type & Q' ty		2YC45DXD × 1
Starting method		Direct line start
Crankcase heater	W	22
Heat exchanger		Straight fin & inner grooved tubing
Refrigerant control		Electronic expansion valve
Refrigerant		**R410A**
Quantity	**kg**	**2.95 (Pre-charged up to the piping length of 30m)**
Refrigerant oil	ℓ	**0.65 (EVC50K)**
Defrost control		Microcomputer controlled de-icer
Air handling equipment Fan type & Q'ty		Propeller fan × 1
Motor	**W**	**120×1**
Starting method		Direct line start
Air flow(Standard)	**CMM**	**Cooling: 60, Heating: 48.5**
Shock & vibration absorber		Rubber mount (for compressor)
Safety equipment		Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data Refrigerant piping size	**mm(in)**	**Liquid line:ϕ9.52 (3/8") Gas line: ϕ15.88 (5/8")**
Connecting method		**Flare piping**
Drain		Hole for drain (ϕ20 × 3pcs.)
Insulation for piping		Necessary (both Liquid & Gas lines)
Accessories		**—**

Notes (1) The cooling and heating capabilities imply the values when the indoor unit of rated capacity is connected under the condition specified in ISO-T1.

(2) The refrigerant quantity in the connecting pipe is not included. Charge it additionally at the site.

(3) Values in [~] show the minimum and maximum capacities.

Model FDCVA402HENAR

Item \ Model		FDCVA402HENAR
Power source		**1 Phase, 220-240V 50Hz/220V 60Hz**
Nominal cooling capacity(1)	**kW**	**10.0 [6.1~11.2]**
Nominal heating capacity(1)	**kW**	**11.2 [5.6~12.5]**
Noise level	dB(A)	50
Exterior dimensions Height × Width × Depth	**mm**	**845 × 970 × 370**
Net weight	**kg**	**74**
Refrigerant equipment compressor type & Q' ty		RM-B5125MDE21 × 1
Starting method		Direct line start
Crankcase heater	W	20
Heat exchanger		Straight fin & inner grooved tubing
Refrigerant control		Electronic expansion valve
Refrigerant		**R410A**
Quantity	**kg**	**3.8 (Pre-charged up to the piping length of 30m)**
Refrigerant oil	ℓ	**0.7 (M-MA68)**
Defrost control		Microcomputer controlled de-icer
Air handling equipment Fan type & Q'ty		Propeller fan × 1
Motor	**W**	**120×1**
Starting method		Direct line start
Air flow(Standard)	**CMM**	**Cooling: 75, Heating: 73**
Shock & vibration absorber		Rubber mount (for compressor)
Safety equipment		Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data Refrigerant piping size	**mm(in)**	**Liquid line:ϕ9.52 (3/8") Gas line: ϕ15.88 (5/8")**
Connecting method		**Flare piping**
Drain		Hole for drain (ϕ20 × 3pcs.)
Insulation for piping		Necessary (both Liquid & Gas lines)
Accessories		**Edging**

Notes (1) The cooling and heating capabilities imply the values when the indoor unit of rated capacity is connected under the condition specified in ISO-T1.

(2) The refrigerant quantity in the connecting pipe is not included. Charge it additionally at the site.

(3) Values in [~] show the minimum and maximum capacities.

Model FDCVA402HESAR

Item	Model	FDCVA402HESAR
Power source		**3 Phase, 380-415V 50Hz/380V 60Hz**
Nominal cooling capacity(1)	**kW**	**10.0 [6.1~11.2]**
Nominal heating capacity(1)	**kW**	**11.2 [5.6~12.5]**
Noise level	dB(A)	50
Exterior dimensions Height × Width × Depth	**mm**	**845 × 970 × 370**
Net weight	**kg**	**74**
Refrigerant equipment compressor type & Q' ty		RM-B5125MDE31 × 1
Starting method		Direct line start
Crankcase heater	W	20
Heat exchanger		Straight fin & inner grooved tubing
Refrigerant control		Electronic expansion valve
Refrigerant		**R410A**
Quantity	**kg**	**3.8 (Pre-charged up to the piping length of 30m)**
Refrigerant oil	ℓ	**0.7 (M-MA68)**
Defrost control		Microcomputer controlled de-icer
Air handling equipment Fan type & Q'ty		Propeller fan × 1
Motor	**W**	**120×1**
Starting method		Direct line start
Air flow(Standard)	**CMM**	**Cooling: 75, Heating: 73**
Shock & vibration absorber		Rubber mount (for compressor)
Safety equipment		Internal thermostat for fan motor. Abnormal discharge temperature protection.
Installation data Refrigerant piping size	**mm(in)**	**Liquid line:ϕ9.52 (3/8") Gas line: ϕ15.88 (5/8")**
Connecting method		**Flare piping**
Drain		Hole for drain (ϕ20 × 3pcs.)
Insulation for piping		Necessary (both Liquid & Gas lines)
Accessories		**Edging**

Notes (1) The cooling and heating capabilities imply the values when the indoor unit of rated capacity is connected under the condition specified in ISO-T1.

(2) The refrigerant quantity in the connecting pipe is not included. Charge it additionally at the site.

(3) Values in [~] show the minimum and maximum capacities.

Models FDCVA502HENAR, 602HENAR

Item \ Model		FDCVA502HENAR	FDCVA602HENAR
Power source		**1 Phase, 220-240V 50Hz/220V 60Hz**	
Nominal cooling capacity(1)	**kW**	**12.5 [6.5~14.0]**	**14.0 [6.7~14.8]**
Nominal heating capacity(1)	**kW**	**14.0 [6.2~16.0]**	**16.0 [6.3~16.8]**
Noise level	dB(A)	52	53
Exterior dimensions Height × Width × Depth	**mm**	**845 × 970 × 370**	
Net weight	**kg**	**74**	
Refrigerant equipment compressor type & Q' ty		RM-B5125MDE21 × 1	
Starting method		Direct line start	
Crankcase heater	W	20	
Heat exchanger		Straight fin & inner grooved tubing	
Refrigerant control		Electronic expansion valve	
Refrigerant		**R410A**	
Quantity	**kg**	**3.8 (Pre-charged up to the piping length of 30m)**	
Refrigerant oil	ℓ	**0.7 (M-MA68)**	
Defrost control		Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty		Propeller fan × 1	
Motor	**W**	**120×1**	
Starting method		Direct line start	
Air flow(Standard)	**CMM**	**Cooling: 75, Heating: 73**	
Shock & vibration absorber		Rubber mount (for compressor)	
Safety equipment		Internal thermostat for fan motor. Abnormal discharge temperature protection.	
Installation data Refrigerant piping size	**mm(in)**	**Liquid line:ϕ9.52 (3/8") Gas line: ϕ15.88 (5/8")**	
Connecting method		**Flare piping**	
Drain		Hole for drain (ϕ20 × 3pcs.)	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		**Edging**	

Notes (1) The cooling and heating capabilities imply the values when the indoor unit of rated capacity is connected under the condition specified in ISO-T1.

(2) The refrigerant quantity in the connecting pipe is not included. Charge it additionally at the site.

(3) Values in [~] show the minimum and maximum capacities.

Models FDCVA502HESAR, 602HESAR

Item \ Model		FDCVA502HESAR	FDCVA602HESAR
Power source		**3 Phase, 380-415V 50Hz/380V 60Hz**	
Nominal cooling capacity(1)	**kW**	**12.5 [6.5~14.0]**	**14.0 [6.7~14.8]**
Nominal heating capacity(1)	**kW**	**14.0 [6.2~16.0]**	**16.0 [6.3~16.8]**
Noise level	dB(A)	52	53
Exterior dimensions Height × Width × Depth	**mm**	**845 × 970 × 370**	
Net weight	**kg**	**74**	
Refrigerant equipment compressor type & Q' ty		RM-B5125MDE31 × 1	
Motor	**kw**	**2.5**	**2.6**
Starting method		Direct line start	
Crankcase heater	W	20	
Heat exchanger		Straight fin & inner grooved tubing	
Refrigerant control		Electronic expansion valve	
Refrigerant		**R410A**	
Quantity	**kg**	**3.8 (Pre-charged up to the piping length of 30m)**	
Refrigerant oil	ℓ	**0.7 (M-MA68)**	
Defrost control		Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty		Propeller fan × 1	
Motor	**W**	**120×1**	
Starting method		Direct line start	
Air flow(Standard)	**CMM**	**Cooling: 75, Heating: 73**	
Shock & vibration absorber		Rubber mount (for compressor)	
Safety equipment		Internal thermostat for fan motor. Abnormal discharge temperature protection.	
Installation data Refrigerant piping size	**mm(in)**	**Liquid line:ϕ9.52 (3/8") Gas line: ϕ15.88 (5/8")**	
Connecting method		**Flare piping**	
Drain		Hole for drain (ϕ20 × 3pcs.)	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		**Edging**	

Notes (1) The cooling and heating capabilities imply the values when the indoor unit of rated capacity is connected under the condition specified in ISO-T1.

(2) The refrigerant quantity in the connecting pipe is not included. Charge it additionally at the site.

(3) Values in [~] show the minimum and maximum capacities.

Model FDCVA802HESAR, 1002HESAR

Item \ Model		FDCVA802HESAR	FDCVA1002HESAR
Power source		**3 Phase, 380-415V 50Hz/380V 60Hz**	
Nominal cooling capacity(1)	**kW**	**20.0 [7.0~22.4]**	**25.0 [10.6~28.0]**
Nominal heating capacity(1)	**kW**	**22.4 [7.6~25.0]**	**28.0 [9.5~31.5]**
Noise level	dB(A)	57	Cooling: 57, Heating: 58
Exterior dimensions Height × Width × Depth	**mm**	**1300 ×970 × 370**	**1505 ×970 × 370**
Net weight	**kg**	**122**	**140**
Refrigerant equipment compressor type & Q' ty		GT-C5150ND79 × 1	
Starting method		Direct line start	
Crankcase heater	W	40	
Heat exchanger		Straight fin & inner grooved tubing	
Refrigerant control		Electronic expansion valve	
Refrigerant		**R410A**	
Quantity	**kg**	**5.4 (Pre-charged up to the piping length of 30m)**	**7.2 (Pre-charged up to the piping length of 30m)**
Refrigerant oil	ℓ	**1.45 (M-MA32R)**	
Defrost control		Microcomputer controlled de-icer	
Air handling equipment Fan type & Q'ty		Propeller fan × 2	
Motor	**W**	**120 × 2**	
Starting method		Direct line start	
Air flow(Standard)	**CMM**	**Cooling: 150, Heating: 145**	
Shock & vibration absorber		Rubber mount (for compressor)	
Safety equipment		Internal thermostat for fan motor. Abnormal discharge temperature protection.	
Installation data Refrigerant piping size	**mm(in)**	**Liquid line:ϕ9.52 (3/8") Gas line:ϕ25.4 (1")**	**Liquid line:ϕ12.7 (1/2") Gas line:ϕ25.4 (1")**
Connecting method		**Liquid line: Flare piping, Gas line: Brazing**	
Drain		Hole for drain (ϕ20 × 6pcs.)	
Insulation for piping		Necessary (both Liquid & Gas lines)	
Accessories		Reducer kit (Please see page 218), Accessory pipe (Please see page 220)	

Notes (1) The cooling and heating capabilities imply the values when the indoor unit of rated capacity is connected under the condition specified in ISO-T1.

(2) The refrigerant quantity in the connecting pipe is not included. Charge it additionally at the site.

(3) Values in [~] show the minimum and maximum capacities.

(3) Operation chart

The Multi-Type V series is a system that allows for different models and capacities of indoor units to be connected so the individual operating characteristics of the indoor and outdoor are provided. Use the procedure shown in Item (c) to calculate the combined operating characteristics.

(a) Operating characteristic of outdoor unit

(220-240V 50Hz/220V 60Hz)

Item \ Model		FDCVA302HENAR	FDCVA402HENAR	FDCVA502HENAR	FDCVA602HENAR
Cooling power consumption	kW	2.02/2.02	2.82/2.82	4.15/4.15	4.64/4.64
Heating power consumption		2.16/2.16	2.97/2.97	4.19/4.19	4.44/4.44
Cooling running current	A	10.4/10.4	12.3/12.3	18.3/18.3	20.4/20.4
Heating running current		11.1/11.1	13.0/13.0	18.4/18.4	19.5/19.5
Inrush current (L.R.A)	A	5			

(380-415V 50Hz/380V 60Hz)

Item \ Model		FDCVA402HESAR	FDCVA502HESAR	FDCVA602HESAR
Cooling power consumption	kW	2.82/2.82	4.15/4.15	4.64/4.64
Heating power consumption		2.97/2.97	4.19/4.19	4.44/4.44
Cooling running current	A	4.1/4.3	6.1/6.4	6.8/7.2
Heating running current		4.3/4.5	6.1/6.4	6.5/6.8
Inrush current (L.R.A)	A	5		

(380-415V 50Hz/380V 60Hz)

Item \ Model		FDCVA802HESAR	FDCVA1002HESAR
Cooling power consumption	kW	6.34/6.34	8.71/8.71
Heating power consumption		6.20/6.20	7.75/7.75
Cooling running current	A	9.1/9.1	12.7/12.7
Heating running current		9.0/9.0	11.4/11.4
Inrush current (L.R.A)	A	5	

Note (1) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"

(b) Operating characteristic of indoor unit

FDTC Series

(220-240V 50Hz/220V 60Hz)

Item \ Model		FDTCA151R	FDTCA201R
Cooling power consumption	kW	0.046-0.046/0.046	
Heating power consumption		0.046-0.046/0.046	
Cooling running current	A	0.15-0.14/0.15	
Heating running current		0.15-0.14/0.15	

FDT Series

(220-240V 50Hz/220V 60Hz)

Item \ Model		FDTA151R	FDTA201R	FDTA251R	FDTA301R	FDTA401R*	FDTA501R
Cooling power consumption	kW	0.064-0.075/0.079		0.072-0.081/0.090		0.129-0.146	0.150-0.150/0.150
Heating power consumption		0.061-0.071/0.076		0.068-0.078/0.086		0.123-0.140	0.146-0.146/0.146
Cooling running current	A	0.32-0.34/0.42		0.37-0.41/0.42		0.56-0.62	0.48-0.44/0.48
Heating running current		0.30-0.33/0.40		0.36-0.39/0.40		0.54-0.59	0.47-0.43/0.47

* Not available in 60Hz

FDEN Series

(220-240V 50Hz/220V 60Hz)

Item \ Model		FDENA151R	FDENA201R	FDENA251R	FDENA301R	FDENA401R	FDENA501R
Cooling power consumption	kW	0.054-0.061/0.061		0.100-0.110/0.110		0.142-0.161/0.166	0.166-0.185/0.200
Heating power consumption		0.050-0.056/0.056		0.091-0.101/0.101		0.130-0.147/0.152	0.152-0.169/0.183
Cooling running current	A	0.25-0.26/0.29		0.46-0.48/0.50		0.65-0.67/0.77	0.77-0.78/0.90
Heating running current		0.23-0.24/0.26		0.42-0.44/0.46		0.59-0.62/0.70	0.70-0.72/0.83

Notes (1) This packaged air-conditioner is manufactured and tested in conformity with the following standard.
ISO-T1 "UNITARY AIR-CONDITIONERS"
(2) The values shown in the above table are common to both cooling and heating operations.

FDUM Series (220-240V 50Hz/220V 60Hz)

Item \ Model		FDUMA202R	FDUMA252R	FDUMA302R	FDUMA402R	FDUMA502R
Cooling power consumption	kW	0.14-0.16/0.14	0.15-0.17/0.15	0.16-0.19/0.16	0.24-0.28/0.24	0.28-0.32/0.32
Heating power consumption		0.14-0.16/0.14	0.15-0.17/0.15	0.16-0.19/0.16	0.24-0.28/0.24	0.28-0.32/0.32
Cooling running current	A	0.63-0.67/0.63	0.68-0.71/0.68	0.73-0.79/0.73	1.07-1.17/1.07	1.28-1.32/1.28
Heating running current		0.63-0.67/0.63	0.68-0.71/0.68	0.73-0.79/0.73	1.07-1.17/1.07	1.28-1.32/1.28

FDKN Series (220-240V 50Hz/220V 60Hz)

Item \ Model		FDKNA151R	FDKNA201R	FDKNA251R
Cooling power consumption	kW	0.05-0.05/0.05		
Heating power consumption		0.05-0.05/0.05		
Cooling running current	A	0.23-0.21/0.23		
Heating running current		0.23-0.21/0.23		

Notes (1) This packaged air-conditioner is manufactured and tested in conformity with the following standard. ISO-T1 "UNITARY AIR-CONDITIONERS"

(2) The values shown in the above table are common to both cooling and heating operations.

(c) Calculation of total operation characteristics

Since the operation characteristics of series Multi depend on combination of indoor unit, calculate the total operation characteristics of the system by using the formulas below according to specifications of each indoor unit or outdoor unit.

1) 1 Phase models

a) Total power consumption

Total power consumption (kW) = Power consumption of outdoor unit + ∑ (Power consumption of indoor unit)

b) Total running current

Total running current (A) = Running current of outdoor unit + ∑ (Running current of indoor unit)

c) Total power factor

Total power factor (%) = [Total power consumption (W) / Total running current (A) × Power source] × 100

Total operation characteristics = Operation characteristic value of outdoor unit + Operation characteristic value of indoor unit

[Example]

(Conditions) Operation Voltage ····· Indoor unit: 220 V, 50 Hz
Outdoor unit: 220 V, 50 Hz
Operation mode ····· Cooling and Heating
Unit····· Outdoor unit: FDCVA602HENAR × 1 unit
Indoor unit: FDTA301R × 2 units

Operation characteristics of each unit (Cooling/Heating)

Item \ Model	FDCVA602HENAR	FDTA301R
Power consumption (kW)	4.64/4.44	0.072/0.068
Running current (A)	20.4/19.5	0.37/0.36

① Total power consumption (kW)

(Cooling) 4.64 + (0.072 × 2) = 4.78

(Heating) 4.44 + (0.068 × 2) = 4.58

② Total running current (A)

(Cooling) 20.4 + (0.37 × 2) = 21.1

(Heating) 19.5 + (0.36 × 2) = 20.2

③ Total power factor (%)

(Cooling) $\frac{4.78 \times 1000}{21.1 \times 220} \times 100 \fallingdotseq 99\ \%$

(Heating) $\frac{4.58 \times 1000}{20.2 \times 220} \times 100 \fallingdotseq 99\ \%$

2) 3 Phase models

a) Total power consumption

Total power consumption (kW) = Power consumption of outdoor unit + ∑ (Power consumption of indoor unit)

b) Total running current

Total running current (A) = Running current of outdoor unit + [∑ (Running current of indoor unit) × 1/3]

c) Total power factor

Total power factor (%) = [Total power consumption (W) / $\sqrt{3}$ × Total running current (A) × Power source] × 100

Total operation characteristics = Operation characteristic value of outdoor unit + Operation characteristic value of indoor unit

[Example]

(Conditions) Operation Voltage ····· Indoor unit: 220 V, 50 Hz
Outdoor unit: 380 V, 50 Hz
Operation mode ····· Cooling and Heating
Unit····· Outdoor unit: FDCVA802HESAR × 1 unit
Indoor unit: FDTA301R × 1 unit, FDTA501R × 1 unit

Operation characteristics of each unit

(Cooling/Heating)

Item \ Model	FDCVA802HESAR	FDTA301R	FDTA501R
Power consumption (kW)	6.34/6.20	0.072/0.068	0.150/0.146
Running current (A)	9.1/9.0	0.37/0.36	0.48/0.47

① Total power consumption (kW)

(Cooling) 6.34 + 0.072 + 0.150 = 6.56 (kW)

(Heating) 6.20 + 0.068 + 0.146 = 6.41 (kW)

② Total running current (A)

(Cooling) $9.1 + \left[(0.37 + 0.48) \times \frac{1}{3}\right] \fallingdotseq 9.6$ (A)

(Heating) $9.0 + \left[(0.36 + 0.47) \times \frac{1}{3}\right] \fallingdotseq 9.5$ (A)

③ Total power factor (%)

(Cooling) $\frac{6.34 \times 1000}{\sqrt{3} \times 9.1 \times 380} \times 100 \fallingdotseq 99\ \%$

(Heating) $\frac{6.20 \times 1000}{\sqrt{3} \times 9.0 \times 380} \times 100 \fallingdotseq 99\ \%$

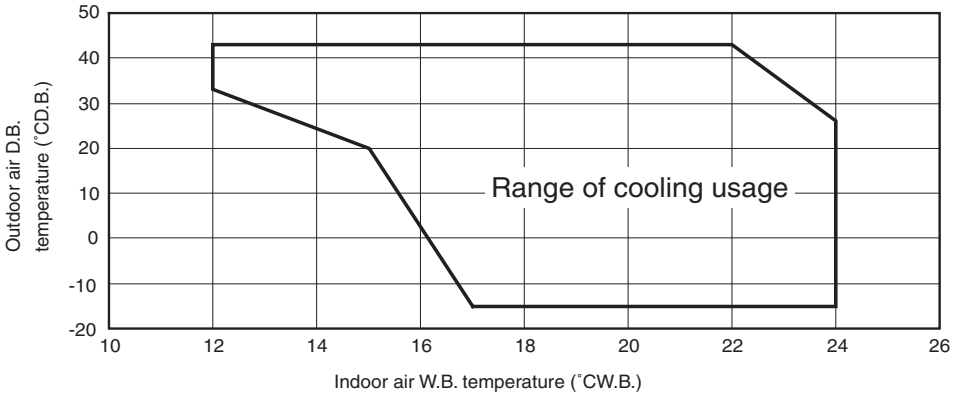
2.2.2 Range of usage & limitations

Item \ Model		FDCVA302~602	FDCVA802, 1002
Indoor return air temperature (Upper, lower limits)		Please see the next page.	
Outdoor air temperature (Upper, lower limits)			
Operating temperature		**When used under -5ºC, install a snow hood (option).**	
Indoor unit atmosphere (behind ceiling) temperature and humidity		Dew point temperature: 28ºC or less, relative humidity: 80% or less	
Refrigerant line (one way) length		**Max. 50m**	**Max. 70m***
Vertical height difference between outdoor unit and indoor unit		Max. 30m (Outdoor unit is higher) Max. 15m (Outdoor unit is lower)	
Difference in after branch piping lengths between indoor units		**Max. 20m**	**Max. 10m**
Difference in height between indoor units		**Max. 0.5m**	
Installation site		**The outline drawing contains restrictions concerning the installation space. Install the indoor unit 2.5m or above higher than the floor surface.**	
Power source voltage		Rating ± 10%	
Voltage at starting		Min. 85% of rating	
Compressor ON - OFF Frequency	**Cycle Time**	7 minutes or more (from OFF to OFF) or (from ON to ON)	
	Stop Time	3 minutes or more	

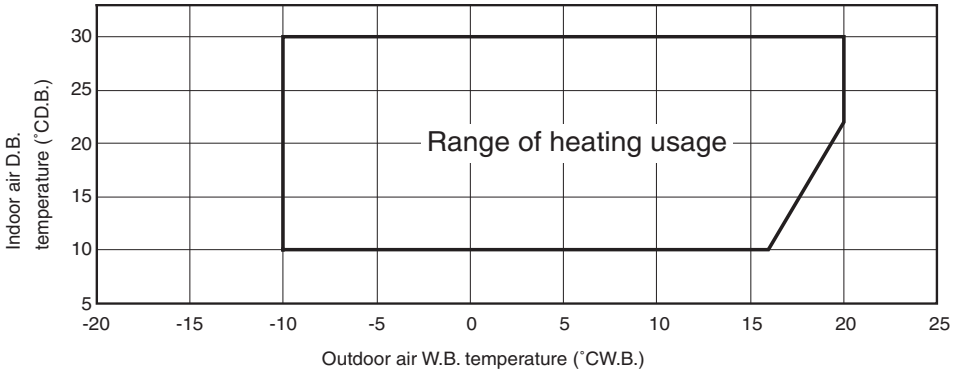
Notes (1) Do not install the unit at the following places.
- Places exposed to oil splashes or steam (e.g. kitchens and machine plants).
- Places where inflammable gas may leak.
- Places containing a great amount of sulfide gases (e.g. hot spring area).
- Places directly exposed to sea breeze (e.g. coastal area).
- Places containing acid or alkaline air.
- Places adjacent to equipment generating electromagnetic waves or high-frequency waves.
- Places sucking the exhaust gas from heat exchanger.
- Do not install the unit on an object moistened with water.
- Places where carbon fiber and metal particles, powder, etc. are floating.
- Places where chimney smoke is hanging.
- Places at an elevation of 1000m and above.
- Places splashed with water (laundry room, etc.).
- The indoor unit is not protected against water penetration.
- Do not install indoor units of twin, triple and double-twin specifications separately in a room with partition.

(2) If ambient temperature and humidity exceed the above values, please add polyurethane foam insulation to the outer plate (t10 and above).
(3) Please set the lower limit of one-way piping length to 5m and above.
(4) When ø22.22 gas pipe is used for piping lengths with the ∗ mark, let the maximum one-way length be 30m.

■ Cooling

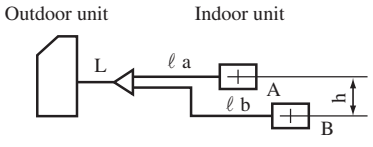


■ Heating



Height and length restrictions for refrigerant piping

Twin type



Models 302~602

One-way pipe length (m) $L + \ell a + \ell b \leqq 50$

Branch pipe length (m) $|\ell a - \ell b| \leqq 10,\ \ell a \leqq 20,\ \ell b \leqq 20$

Difference in height between indoor units (m) h=0.5 or less

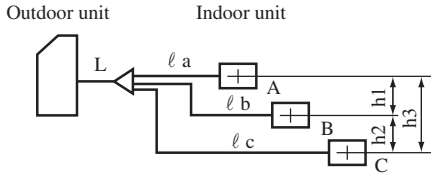
Models 802, 1002

One-way pipe length (m) $L + \ell a \leqq 70,\ L + \ell b \leqq 70$

Branch pipe length (m) $|\ell a - \ell b| \leqq 10,\ \ell a \leqq 30,\ \ell b \leqq 30$

Difference in height between indoor units (m) h=0.5 or less

Triple type



Model 602

One-way pipe length (m) $L + \ell a + \ell b + \ell c \leqq 50$

Branch pipe length (m) $|\ell a - \ell b| \leqq 10,\ |\ell a - \ell c| \leqq 10,\ |\ell b - \ell c| \leqq 10$
$\ell a \leqq 20,\ \ell b \leqq 20,\ \ell c \leqq 20$

Difference in height between indoor units (m) h1=0.5 or less, h2=0.5 or less, h3=0.5 or less

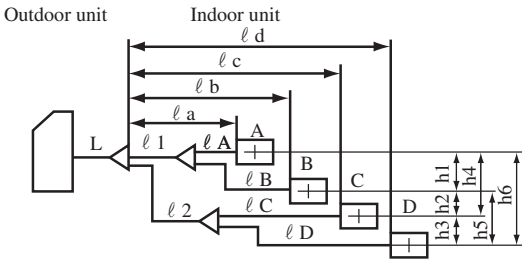
Models 802, 1002

One-way pipe length (m) $L + \ell a \leqq 70,\ L + \ell b \leqq 70,\ L + \ell c \leqq 70$

Branch pipe length (m) $|\ell a - \ell b| \leqq 10,\ |\ell a - \ell c| \leqq 10,\ |\ell b - \ell c| \leqq 10$
$\ell a \leqq 30,\ \ell b \leqq 30,\ \ell c \leqq 30$

Difference in height between indoor units (m) h1=0.5 or less, h2=0.5 or less, h3=0.5 or less

Double-twin type



Models 802, 1002

One-way pipe length (m)	$L + \ell a \leqq 70,\ L + \ell b \leqq 70,\ L + \ell c \leqq 70,\ L + \ell d \leqq 70$
Branch pipe length (m)	$\lvert \ell a - \ell b \rvert \leqq 10,\ \lvert \ell a - \ell c \rvert \leqq 10,\ \lvert \ell b - \ell c \rvert \leqq 10$
	$\lvert \ell a - \ell d \rvert \leqq 10,\ \lvert \ell b - \ell d \rvert \leqq 10,\ \lvert \ell c - \ell d \rvert \leqq 10$
	$\ell a \leqq 30,\ \ell b \leqq 30,\ \ell c \leqq 30,\ \ell d \leqq 30$
	$\ell A + \ell B \leqq 15,\ \ell C + \ell D \leqq 15$
Difference in height between indoor units (m)	h1=0.5 or less, h2=0.5 or less
	h3=0.5 or less, h4=0.5 or less
	h5=0.5 or less, h6=0.5 or less

In the illustration the L is main piping and ℓ a, ℓ b, ℓ c, and ℓ d are branch piping.

Request

(1) When the capacity of the indoor unit to be connected is 151, 201 and 251 or less, be sure to use a pipe diameter of ø9.52 for the size of the liquid piping of branch piping (between branch and indoor units). (for double-twin only) For connections to indoor units (liquid piping side dia. ø6.35) use the different diameter adapter coupling that is included in the branch piping kit.

(2) For the branch be sure to select the specified branch pipe set (sold separately) and then to follow the directions of the instruction manual included in the branch pipe set when installing the piping. Be sure to install the branch piping so that the branch is level.

2.2.3 Exterior dimensions

Details are the same as in chapter 1.2.3 see page 93.

2.2.4 Inside view

Details are the same as in chapter 1.2.4 see page 113.

2.2.5 Exterior appearance

Details are the same as in chapter 1.2.5 see page 116.

2.2.6 Piping system

Details are the same as in chapter 1.2.6 see page 119.

2.2.7 Selection chart

Details are the same as in chapter 1.2.7 see page 126.

2.2.8 Characteristics of fan

Details are the same as in chapter 1.2.8 see page 137.

2.2.9 Noise level

Details are the same as in chapter 1.2.9 see page 140.

2.3 ELECTRICAL DATA

Details are the same as in chapter 1.3 see page 144.

2.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

Details are the same as in chapter 1.4 see page 156.

2.5 APPLICATION DATE

Details are the same as in chapter 1.5 see page 184.

2.6 MAINTENANCE DATE

Details are the same as in chapter 1.6 see page 236.

3. WIRELESS KIT (OPTIONAL PARTS)

3.1 FDT series

The FDT series is an exclusive series with all wired models. However, these models can also be used as wireless units by using the optional wireless kit.

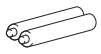
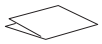
Model

Model
FDT series all model

(1) Wireless kit model

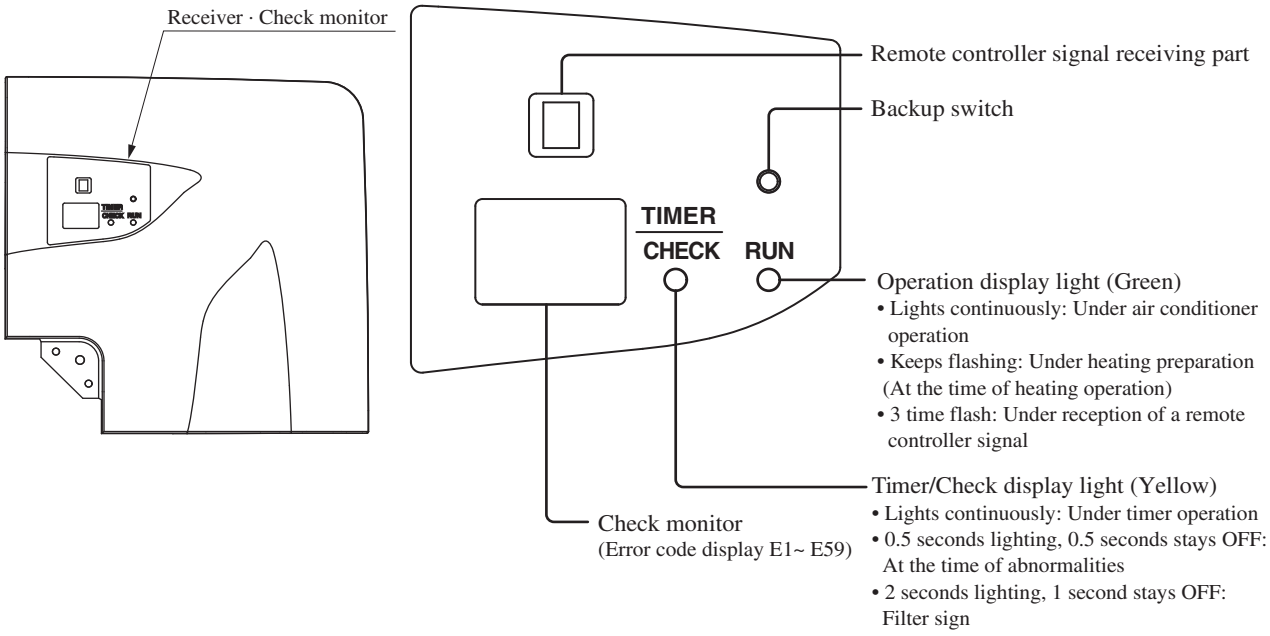
Model	Paint color
RCN-T-35W-ER	Plaster white

(2) Accessories

Name		Quantity	Name		Quantity
Receiver		1	AAA dry cell battery		2
Wireless remote controller		1	Wood screw for holder		2
Remote controller holder		1	Parts set		1

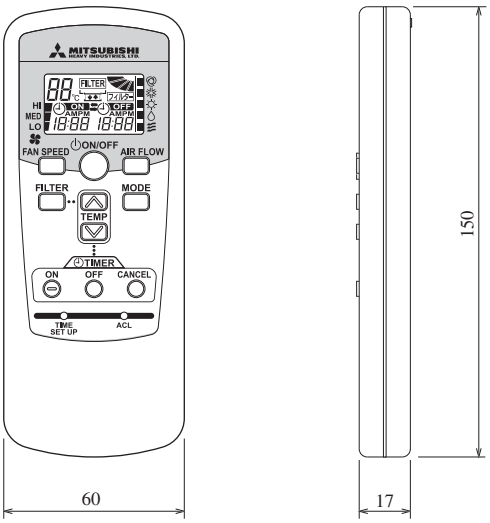
(3) Receiving outside view and function

● **Corner panel** ● **Receiver part details**


Receiver · Check monitor
Remote controller signal receiving part
Backup switch
TIMER
CHECK
RUN
Operation display light (Green)
• Lights continuously: Under air conditioner operation
• Keeps flashing: Under heating preparation (At the time of heating operation)
• 3 time flash: Under reception of a remote controller signal
Timer/Check display light (Yellow)
• Lights continuously: Under timer operation
• 0.5 seconds lighting, 0.5 seconds stays OFF: At the time of abnormalities
• 2 seconds lighting, 1 second stays OFF: Filter sign
Check monitor
(Error code display E1~ E59)

(4) Wireless remote controller

unit: mm



(5) Attachment of wireless kit

(a) Installation of the receiver

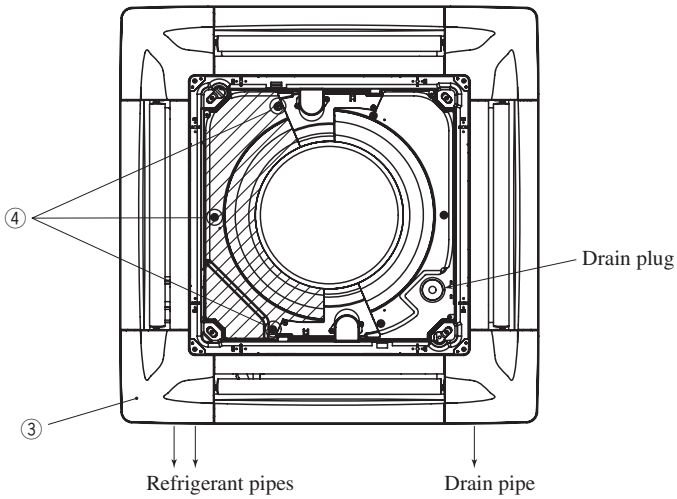
1) Preparation before installation

① Attachthe cover panel supplied as an accessory onto the indoor unit according to the panel installation. (Refer to 193 page)

② Remove the air return grille. (Refer to 194 page)

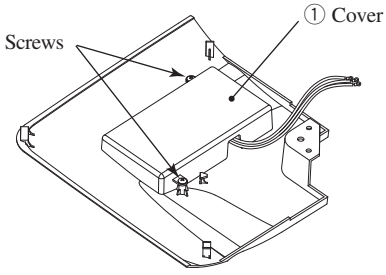
③ Remove a corner panel located on the refrigerant pipe side.

④ Remove three screws and detach the cover (indicated as a shadowed area) from the indoor unit control box.



2) Local setup

① Remove the cover by unscrewing two screws from the back of the receiver



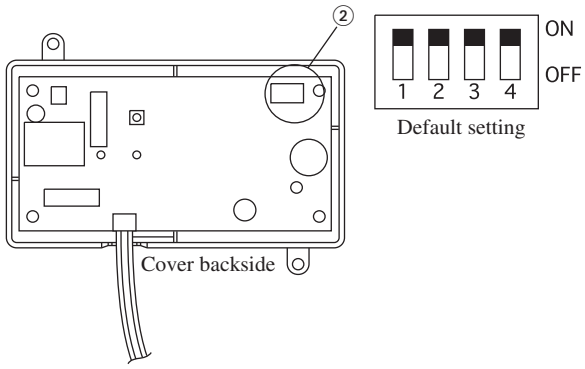
Wireless kit backside

② Turn switches provided on the back of the PCB.

Switches (SW1-4) provided on the receiver PCB are for setting the following.

All switched are set to the ON position for shipment.

SW1	Prevention of unintended movement caused by interference.	ON:Normal OFF:Remote
SW2	Receiver master/slave setting	ON:Master OFF:Slave
SW3	Buzzer valid/invalid	ON:Valid OFF:Invalid
SW4	Cooling only/heat pump switching	ON:Heat pump OFF:Cooling only



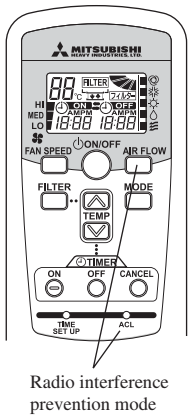
③ When SW1 is turned to the OFF position, change the corresponding remote controller setting as follows.

Wireless remote controller setting change

Either pressing the "ACL" switch or inserting batteries with the "AIR FLOW" button depressed will change the mode setting to the radio interference prevention mode.

(*When batteries are removed, the setting will be reset to the default setting.
When batteries are removed, please follow the above procedure again.)

Please do not forget to explain the abovementioned operation method to the customer. The operation method is also set out in the instruction manual supplied with the indoor unit.



3) Attachment of wireless kit

① By loosening the panel hanger bolt, create a gap between the panel and the indoor unit.

② Lay the wireless kit wiring through the opening.

③ lace the wiring together with other wiring laid on site into the indoor unit.

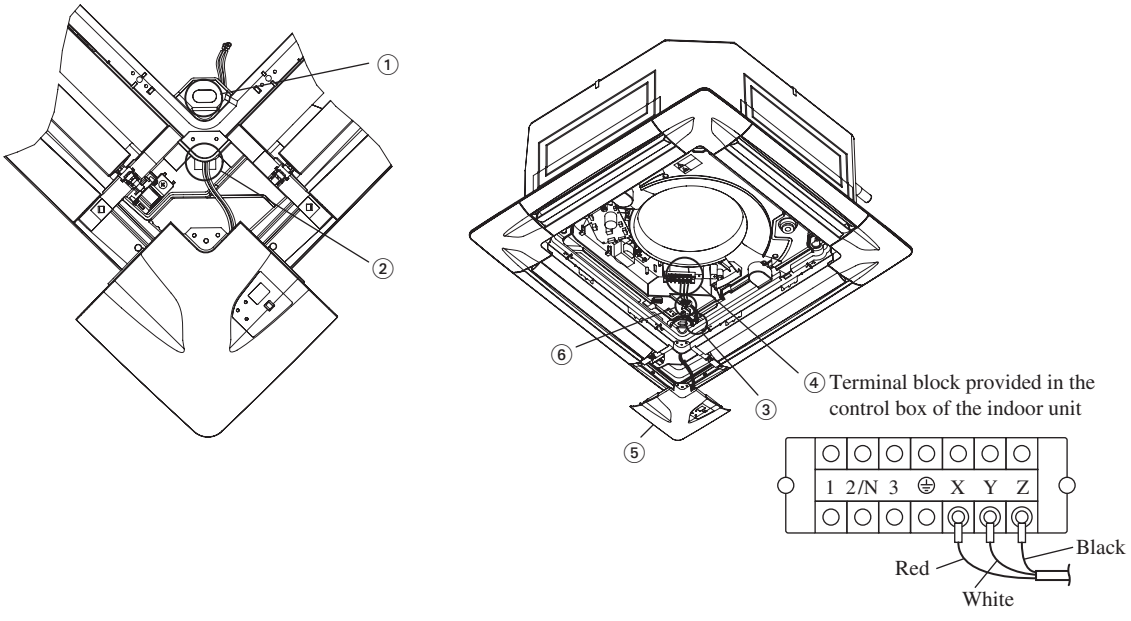
④ Connect the wiring to the terminal block provided in the control box as follows.

X-Red,Y-White, Z-Black.

⑤ Attach the wireless kit to the panel according to the panel installation. (Refer to 196 page)

⑥ Bundle redundant wiring together with other wiring laid on site.

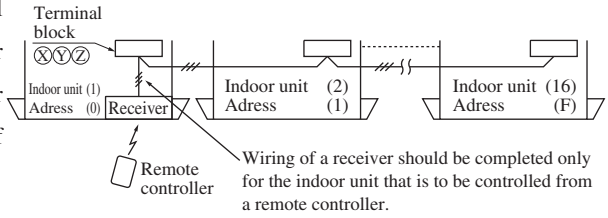
Note (1) Ensure that wirings are not caught between the receiver and the panel in attaching the receiver.



(6) Control of a plural number of indoor units with one remote controller

(a) Up to 16 indoor units can be connected.

① Connect indoor unit's Ⓧ, Ⓨ and Ⓩ terminal swith 3-core connecting wires (remote controller signal wires). For a connecting wire, please refer to the "Restrictions on the thickness and length of a connecting wire".



② The receiver wiring must be connected only for the indoor unit that will be operated by the remote controller directly.

③ Set the address of remote controller communication to [0] through [F] avoiding overlap with the rotaly switch SW2 provided on the indoor unit's PCB.

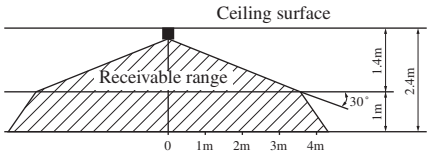
Note (1) Up to two receivers can be installed. When two receivers are used. it is necessary to turn SW2 provided on the PCB of one of the two receivers to the OFF position as a slave.

(b) Wireless remote controller operation distance

① Standard signal receiving range

[Condition] Illuminance at the receiver area: 300 lux.

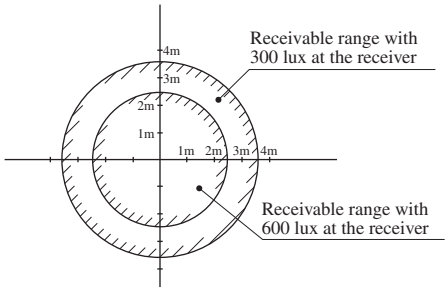
(When no lighting fixture is located within 1m of PAC in an ordinary office)



② Relation between illuminance at the receiver and the receivable range viewed from above

[Condition] Relation between illuminance at the receiver and the receivable range when a remote controller is operated 1m above the floor under the ceilling that is 2.4m above the floor.

When illuminance doubles, the receivable range drops to two thirds.



③ Points for attention in connecting a plural number of indoor units

[Condition] Illuminance at the receiver area: 300 lux.

(When no lighting fixture is located within 1m of PAC in an ordinary office)

[When more than one unit are installed close each other]

Distance between units that can prevent them from making the same movement is 5m.

(7) Check display list

Display	LED		Display method
	RUN	TIMER/CHECK	
Reception	Green	–	3 time flash (ON-0.25 seconds, OFF-0.25 seconds)
Hot keep	Green	–	Keeps flashing (ON-0.5 seconds, OFF-0.5 seconds)
Operation	Green	–	Lights continuously
Stop	Green	–	Stays OFF
Center mode	–	Yellow	3time flash (ON-0.25 seconds, OFF-0.25 seconds)
Check	–	Yellow	Keeps flashing (ON-0.5 seconds, OFF-0.5 seconds)
Filter sign	–	Yellow	Keeps flashing (ON-2 seconds, OFF-1 seconds)
Timer	–	Yellow	Lights continuously

3.2 FDTC • FDUM • FDU series

This product is dedicated for heat pump unit. Never install on the unit dedicated for cooling.

SAFETY PRECAUTIONS

- Always read these "Safety Precautions" thoroughly before starting installation work.
- These precautions describe important information related to safety. Always observe these precautions.
- Refer to the installation manual enclosed with the indoor unit for the indoor unit installation methods.
- After completing the installation, carry out a test operation, and confirm that there are no abnormalities. Also, explain the usage method to the user. Have the user store this manual for future reference.

⚠ WARNING

- Contact the installation to your dealer or a specialist. Incorrect installation by the user could cause electric shocks and fires.
- Always follow this instruction manual and accurately carry out the installation work. Incorrect installation could cause electric shocks and fires.
- The electric work must be carried out by a qualified electrician according to the Electrical Installation Technical Standards, Wiring Regulations and Instruction Manual. Incorrect work could cause electric shocks or fires.
- Use the designated cable for the wiring and make sure that it is securely connected. Fix the cable so that the external force of the cable is not applied on the terminal connection section. Incomplete connections or fixing could cause heating and fires.
- Always use the enclosed parts and designated parts for the installation work parts. Use of parts not designated by Mitsubishi could cause electric shocks or fires.

(1) Wireless kit model

RCND-KIT-HER

(2) Accessories (Confirm the following accessories).

① Light detection adaptor	1
② Wiring (3m)	1
③ Parts set (A)	1
④ Parts set (B)	1
⑤ Parts set (C)	1
⑥ Wireless remote controller	1
⑦ User's manual	1

① Screw for light detection adaptor	2
② Fixing band	1
③ Clamp	5
④ Screw for clamp	5

① Remote controller holder	1
② Screw for holder	2
③ Dry cell for remote controller	1

① Light detection section installation bracket	1
② Screw for the bracket	2
③ Installation fitting	2

(3) Setting of jumper wire

a) Method to prevent the malfunction due to the interference

Perform both procedures ① and ②.

This setting is made to prevent the interference with other household electric appliances or the interference occurred when two light detection adaptors are located closely.

① Setting change of the wireless remote controller

While pressing the AIR FLOW button, press ACL button or load the battery. The setting changes to the interference prevention setting.

② Modification of light detection adaptor substrate

Turn SW1-1 OFF (remote).

b) Changeover of Master/slave remote controller

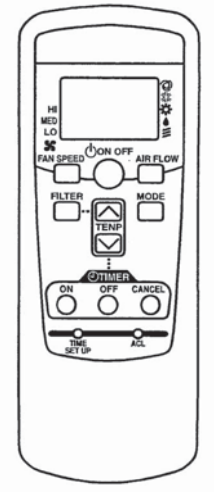
When you use the wireless remote controller as the slave remote controller, Turn light detection adaptor SW1-2 OFF (slave).

c) How to set the 3 air-blow speeds

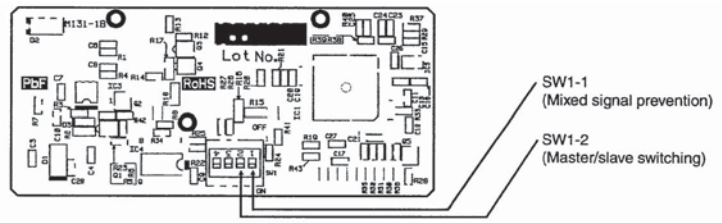
To change to 3-speed air blow, press the ACL switch while holding down the FAN SPEED button; or insert the batteries in the remote control while holding down the FAN SPEED button. (In that case, set the temperature range from 16 to 30°C if using the heating mode; or set from 18 to 30°C if not using the heating mode.)

Note (1) To cancel all the remote control settings, press the ACL switch. All remote control settings are then reset to initial (factory) settings.

● **Wireless remote controller**



● **Light detection adaptor substrate**



SW1-1	Prevention of malfunction from mixed signals	O N : Normal OFF : Remote
SW1-2	Receiver master/slave switching	O N : Master OFF : Slave

All switches are turned ON when the product is shipped from the factory.

⚠CAUTION

* When the battery is once removed, the setting returns to the initial setting condition (setting at factory shipping). Therefore, when the battery has been removed, perform the above mentioned wireless remote controller setting change work again.

Ensure to explain the handling method to the customer.
(The handling method is also mentioned in the operation manual.)

(4) Installation work

⚠ Avoid installing the receiver amp in the following positions, as faults may occur or light detection adaptor may be obstructed.

① Places subject to direct sunlight.
② Places near heat generating appliances.
③ Places with high humidity levels or where water may come in contact.
④ Places with bumpy surfaces.
⑤ Places near fluorescent lights (especially the inverter type) or where light may directly contact the light detection surface.
⑥ Places hidden by the indoor unit, etc., when looking from the wireless remote controller operation positions.
⑦ Places subject to the air blow off by the indoor unit.

The following two installation methods can be used to install the light detection adaptor onto the ceiling. Select a method according to the installation position.

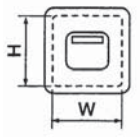
<Installation method>

• Installation with enclosed bracket.
• Direct installation onto the ceiling with wood screws.

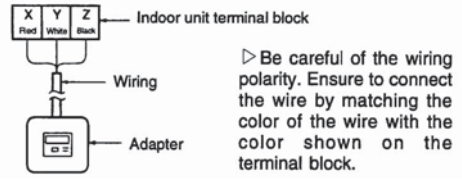
a) Drilling of the ceiling (ceiling opening)

Drill the light detection adaptor installation holes with the following dimensions at a the ceiling position where wires can be connected.

(A) Installation with enclosed bracket.	108 mm (H) × 108 mm (W)
(B) Direct installation onto with wood screws.	88 mm (H) × 101 mm (W)



b) Wiring connected to the light detection adaptor



⚠ CAUTION

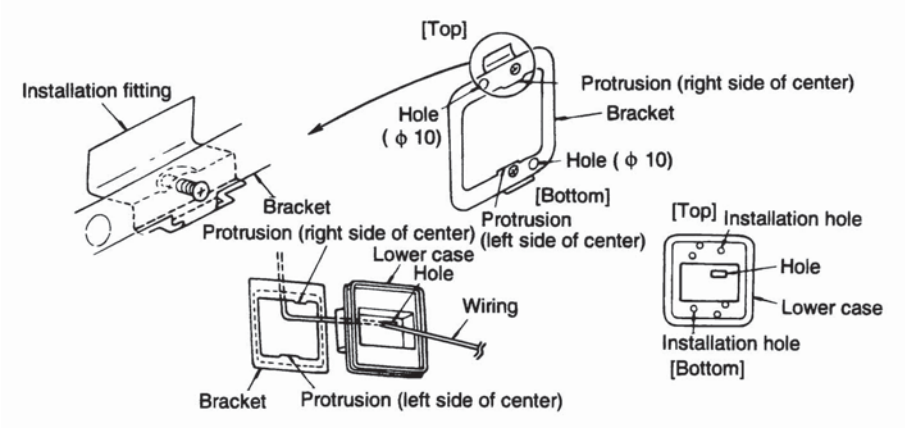
Do not connect the wiring to the power supply part of the terminal block.
If it is connected, printed board will be damaged.

c) Installation for light detection adaptor

Remove the screw on the side of the light detection adaptor, and sprit it into the upper case and lower case.
Install the receiver with one of the four installation methods (A) or (B) shown below.

d) Installation with enclosed bracket

Use this method when installing onto a gypsum board (7 or 18 mm), etc.



① Catch the two protrusion of the enclosed bracket onto the fitting as shown above, and temporarily fix with the screws. (The bracket has an up/down and front/back orientation. Confirm the top/bottom protrusion positions and the positional relation of the ø 10 holes on the bracket and the installation hole on the lower case with the above drawing.)

② Insert the end of the installation fitting into the back of the ceiling from the opening, and tighten the screws to fix the bracket onto the ceiling.

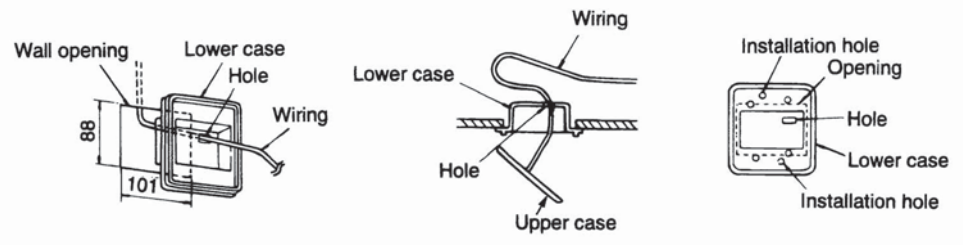
③ Pass the wiring from the rear side through the hole on the lower case.

④ Fit the lower case onto the bracket, and fix the lower case to the bracket using the two installation holes shown above. (The other four holes are not used.)

⑤ Follow steps ① to ③ for (B) to complete the installation.

e) Direct installation onto the ceiling with wood screws

▷ Use this installation method when the ceiling is wooden, and there is no strength-wise problem in installing directly with wood screws.



① Fit the lower case into the ceiling opening. Make sure that the convex section on the back of the lower case and the clearance with the ceiling opening are as equal as possible on both sides.

② Using the two installation holes shown above, fix the lower case onto the ceiling with the enclosed wood screws. (The other four holes are not used.)

③ Fit the upper case onto the lower case, and tighten the screw.

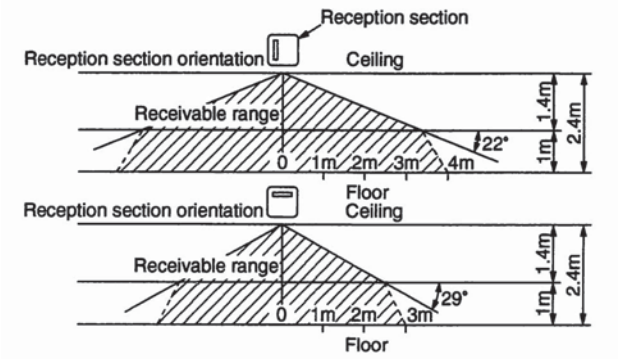
(5) Wireless remote controller operation distance

a) When installed on ceiling

① standard reception distance

Conditions

Reception section illuminance 300 lux (When there are no lights on the ceiling within 1 m or the reception adaptor in a general office.)



② Relation of reception section illuminance and reception distance looking from flat plane

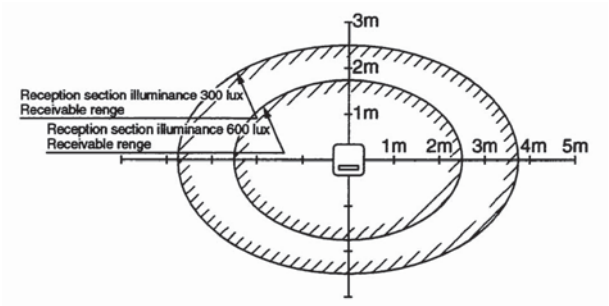
Conditions

Relation of the reception section illuminance and reception distance when the remote controller is operated at a height of 1 m from the floor with a ceiling height of 2.4 m.
The reception distance becomes 2/3 when the illuminance is double.

b) When installed on wall

Conditions

Reception section illuminance **800 lux**

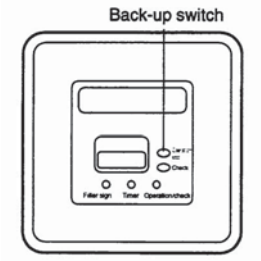


(6) Installation of remote controller

- Refer to the installation manual of remote controller

(7) Trial run of cooling operation

- While pressing the back-up switch on the receiver unit, transmit the signal of cooling operation from the wireless remote controller.



- If the unit does not operate normally at the trial run, check the unit referring to the inspection items shown on the wiring diagram plate stuck on the indoor and outdoor unit.

MULTI-TYPE (V-MULTI)
PACKAGED AIR-CONDITIONER

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